

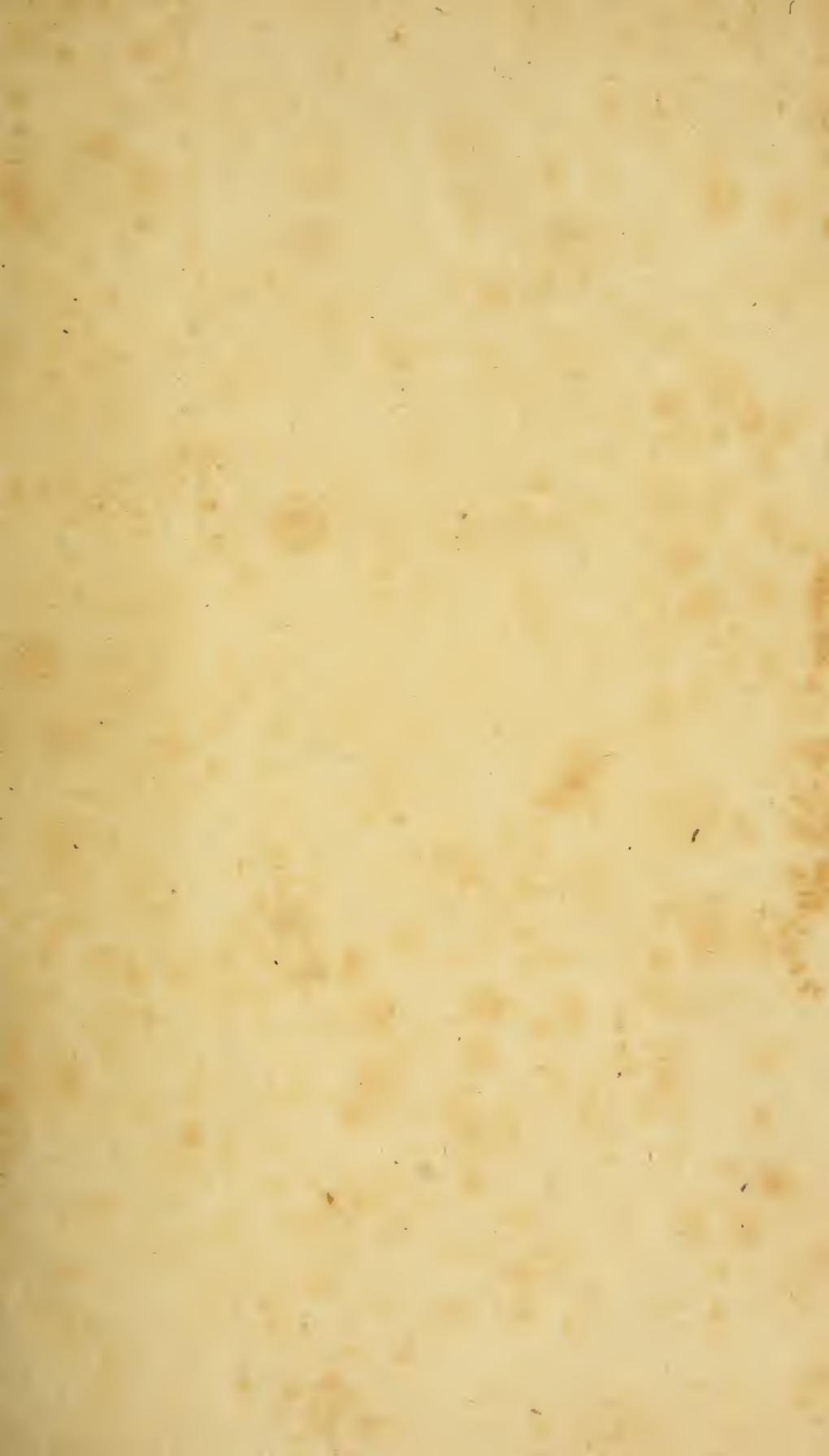




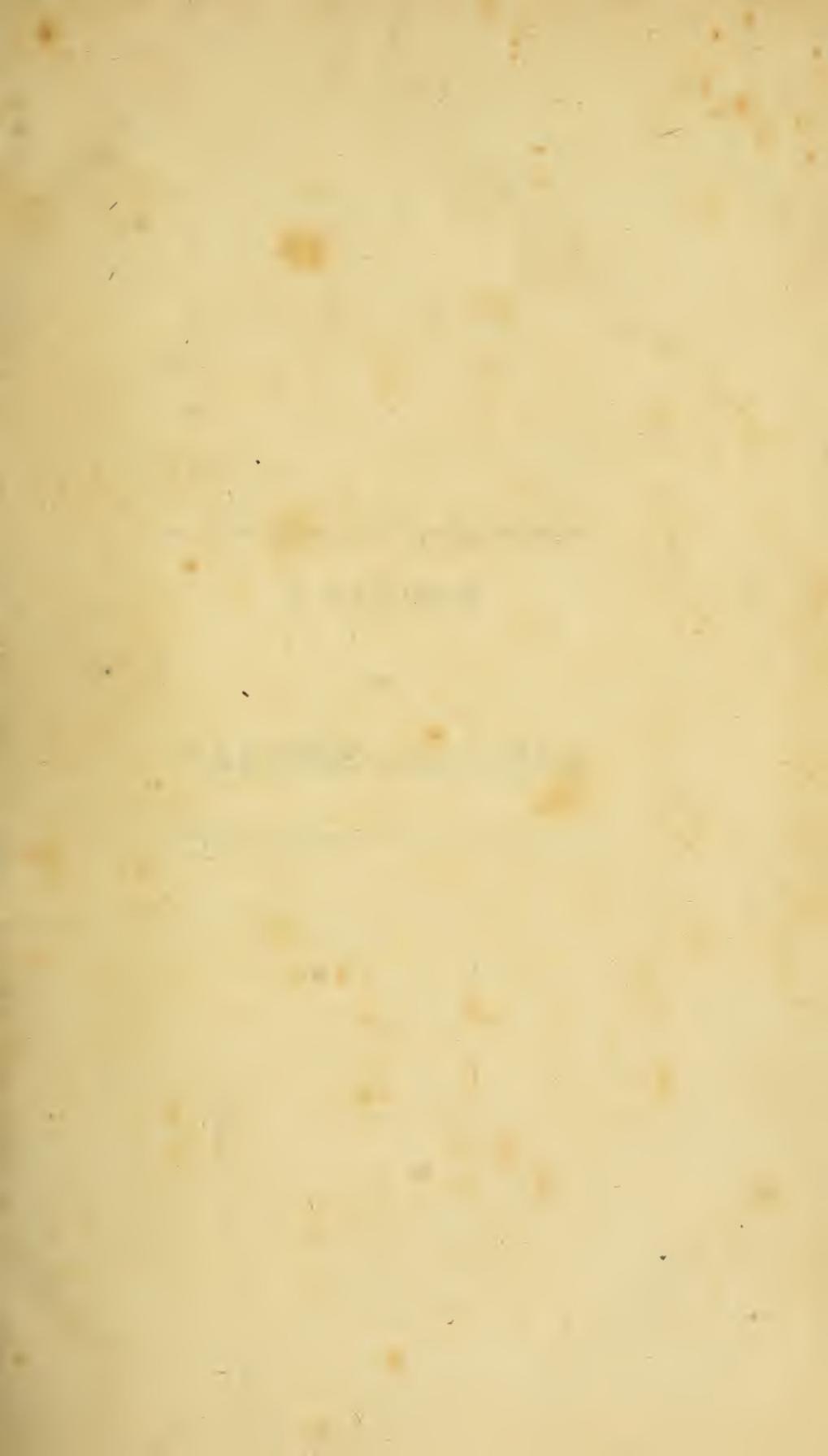
La L. Peiron.











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A SKETCH
OF
FEBRILE DISEASES.

THE HISTORY OF

STOCKTON

BY JAMES STOKES.

NOTTINGHAM,

1810. 8vo.

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ARMED STRUGGLE

FOR INDEPENDENCE

STOCKTON: PRINTED BY T. EELIS.

A
SKETCH
OF THE
HISTORY AND CURE
OF
FEBRILE DISEASES;

MORE PARTICULARLY AS THEY APPEAR
IN THE
WEST-INDIES
AMONG THE SOLDIERS OF THE BRITISH ARMY.

BY
ROBERT JACKSON, M. D.

SECOND EDITION, WITH MANY ADDITIONS.

IN TWO VOLUMES.

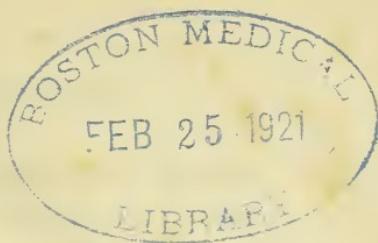
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1820.



Mark 114



A

SKETCH

OF

FEBRILE DISEASES.

History and Cure of Febrile Disease as characterized by different Forms of Local Action.

THE outline of the history and cure of the fever, which is given in the preceding pages, applies to fever as a disease of the organic system acting on a general base. Fevers, I am aware, rarely occur at any time, where some one part does not suffer more prominently than others in all stages of the course; but the term *general* is here affixed to that form of disease, where the predominance is fluctuating and contingent, *local*, where it is prominent at the commencement, and where it continues uniformly prominent throughout. The cause, which produces inequality in the force and mode of the perverted movements, which are excited by the action of the cause of fever in the different organs of the

system, is necessarily obscure. I do not pretend to explain it; and I only take leave to suggest that it is apparently connected with the unequal condition of organic sensibility existing at the time the morbid cause is applied, or that it explodes into action; a condition constitutional or contingent, as depending upon the operation of general or contingent causes to which the movements of animal life are exposed.—The forms of febrile disease which manifest prominent local action are numerous; I only advert to those that are important.

CHAPTER I.

Forms of Fever, the prominent Symptoms of which are manifested in the Organs which are contained in the inferior or Abdominal Cavity.

SECTION I.

A. *Gastric, or Bilious Remittent Fever.*

CHAP.
I.

The gastric, or bilious remittent fever is one of the most common, and one of the most important of the febrile forms which occur in armies, and even in civil communities. It belongs to all countries; and it is endemic in the West-Indies at all

seasons of the year, especially among native subjects and those who have been so long resident as to be acclimated. But though common to all countries, and observed occasionally at all seasons of the year, it prevails more generally in warm countries on extensive alluvial plains, in the autumnal months, than in cold countries, mountainous and hilly districts, during winter and spring.

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Gastric fever is a disease of the whole system, manifesting its action more prominently in the organs within the abdominal cavity than in others. It occurs under every form of general temperament; but more commonly under what is termed lymphous and serous than sanguine. It owes its origin to emanation from the soil, more generally or more partially diffused. It runs its course as a febrile disease, and terminates favourably or fatally as may be; but, besides its own mode of final termination, it is prone to assume a new form and to acquire a new quality so as to constitute a new disease which has its own law of movement.

It thus assumes the contagious character, or is readily convertible into contagious fever in protracted campaigns in temperate latitudes. When ingrafted with the contagious property, it propagates from person to person, either by direct communication, or by the medium of substances that have been in contact with the person infected. But, though the gastric fever often acquires the contagious character after a manner that may be termed artificial, it is only to the form which acts on ves-

Character.

CHAP. I. sets of serous secretion, most probably on the subtle, invisible and imponderable secretions, that this character can be supposed to attach. The predominant temperament, under which the gastric form of fever occurs, modifies appearances in such manner as to produce contradictions which embarrass the history of the symptoms, unless the characteristic of the temperament be kept in view in marking the description. If that be done, the history, as resolvable to its proper base, maintains consistency throughout. For example, in subjects of the sanguine temperament, the febrile movements are comparatively regular, the course short, the termination critical, viz. by sweat and hypostatic urine ; in the lymphous, the movements are comparatively obscure, the course protracted, the termination undecided, the recovery slow and imperfect as connected with visceral congestion ; in the serous, the symptoms are comparatively irregular and fluctuating, alternating between constriction and relaxation, the sensations irksome or painful, the termination more or less perfect—effected by cutaneous or alvine excretion.

History.

The commencement of the gastric form of fever is marked, like the commencement of most other fevers, by more or less of cold and chilliness. The exacerbations, where exacerbations and remissions are distinguishable, are often, but not always ushered in by slighter sensations of cold, seldom by rigor, and seldom by noticeable sensation of cold where paroxysms and remissions are obscure. The functions

of the organs, which are seated within the abdominal parietes, are those which are principally disturbed at the commencement of this form of disease; and they are those which continue disturbed throughout for the first period, that is, the first seven days. At that time, the form of action is frequently changed, or transferred to another series of parts—most commonly to the sentient system, viz. organ of intellect or organ of locomotion.

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Besides sensations of chilliness, the common precursor of fever, the gastric form is more than others distinguished by a bad taste of the mouth, viz. bitter or mawkish, by nausea and vomiting, sometimes vomiting of bile, sometimes vomiting of viscid phlegm, by aversion from food—sometimes by abhorrence at the sight or smell of it. Thirst is irregular, sometimes great, sometimes not materially increased. The tongue is ordinarily foul; sometimes slimy, brown or yellow; sometimes cream coloured, or of a milky white—the surface studded with patches of a meal-like substance; sometimes it is covered with viscid saliva; sometimes it is rough and dry; and, sometimes, its appearance is not materially changed from what is natural. In some cases, the foulness, which covers the tongue from the commencement, increases gradually as the disease proceeds in its course: sometimes moist, sometimes dry, it gradually acquires thickness and substance until the time of crisis, when it separates, falls off and leaves a clean and healthy looking surface underneath. In this case, a sign of consider-

CHAP. I. able reliance, for calculating the progress and prognosticating the issue of the disease, is drawn from the condition of the tongue ; but in others, and not in few, the appearances of the tongue are so little remarkable as not to furnish any decided indication of the issue, even of the existing condition. The tongue ordinarily becomes smooth and moist at critical periods : it also becomes moist and often clean where the fever changes form, that is, where the morbid act suffers transfer to another series of parts. Where the course of the disease is protracted, the tongue, after the eighth or ninth day, sometimes becomes dry, smooth, red and glossy, sometimes dry, black, parched and rough, occasionally covered with a black pellicle or crust —irregularly moist or dry.—The stomach, besides nausea or sickness, often suffers other distress in this form of disease. It is sometimes inflated, sometimes tender of the touch, or impatient of pressure ; sometimes sunk or hollow as if it were lost—a condition often accompanied with anguish and inconceivable anxiety. The hypochondria are distended in most cases, especially at the advanced stages, tense and tender of the touch, or indolent. The distention often extends to the whole of the abdomen, sometimes accompanied with costiveness, often with watery and irregular, ineffective purging. Instead of inflation and tension, the abdomen is sometimes collapsed as if it were empty—a condition generally connected with anxiety and restlessness of the most agonizing kind. The excretive

function of the bowels is usually disordered, the body costive on some occasions—even obdurate and constricted, as in *colica pictonum*; open, or loose to excess in others. The evacuations are often small, ineffective, sharp and acrid; or watery—without feculence; sometimes they are copious and bilious, the bile on some occasions pure and yellow, and so excessive in quantity during the period of exacerbation, as if the whole of the febrile act had been turned upon the biliary secretion. In other cases, the evacuations, while bilious, are small in quantity, of a dirty yellow colour, sometimes green, sometimes brown, sometimes dark or blackish, sometimes thin and acrid, sometimes thick and pultaceous—greasy and scarcely feculent. The urinary discharge is changed, sometimes scanty, sometimes copious—more or less bilious. The pulse varies according to the predominance of the temperament; but in the sanguine and lymphous, it is not frequent as a febrile pulse. In the former, it is free and expanded; in the latter, often torpid and obscure. In the serous, it is often irregular, and sometimes so inordinately excited within the abdominal cavity that the pulsation of the descending aorta strikes with a force almost equal to that of the heart itself. The eye, according to the character of the predominating temperament, is bright, brilliant and animated, or dull, torpid and unexpressive—the white of a dingy pale, more or less tinged with yellow: the veins are sometimes turgid, sometimes not. The

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CHAP. I. aspect of countenance is often of a dusky pale colour, sometimes dry, yellow and withered—dirty in spite of washing, more particularly in subjects of the serous habit; sometimes it is suffused with bloom as if it were painted artificially. The lips are usually thin, dry and somewhat parched. The skin is, for the most part, dry and harsh; sometimes it is clammy, damp and greasy: it rarely has the softness and unctuousness that belongs to the skin of a person in health. The heat scarcely attains the standard of febrile heat on the extreme surface, particularly in the lymphous habit; it is often high at the præcordia. Heat is ordinarily high in the serous temperament, both to sensation and as measured by the thermometer—often sharp, acrid and pungent, fluctuating and unsteady.—The above symptoms constitute the base of action in the gastric form of fever. They rise and fall in periods; but they do not entirely disappear in what is termed the remission. During the exacerbation, anxiety, restlessness, anguish at stomach, vomiting, faintness, tremors, startings, delirium of various form and character—from violence and outrage to flights of fancy and simple incoherence, are more or less striking.

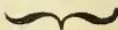
Recurrence
or second
Course.

The gastric form of fever is upon the whole a fever of long duration. A crisis or change frequently occurs about the seventh day. A recurrence then takes place, sometimes on the same, sometimes on a different base. It proceeds through another septenary period; at the close of which it ceases, or changes

form. Another course commences and proceeds to another termination ; and, in this manner, this form of fever extends through a series of septenary, or other revolutions to final issue in death or recovery —often at a distant period. If the morbid act continue on the gastric base, the symptoms are analogous with those already described, differently modified perhaps, but radically the same. The tongue is often rough and dry in the secondary form ; sometimes red, clean and glossy ; sometimes covered with a skin or pellicle—generally black and often dry : the teeth are frequently covered with sordes. Thirst is irregular, sometimes great, sometimes not materially increased. The excretive function of the bowels is also irregular—the body sometimes constive, oftener loose—even to purging : the stools are various, viz. watery, scanty and ineffective, biliary—mixed or pure, sometimes black—and dirty like muddy coffee, sometimes black and smooth like liquid tar or molasses—copious or scanty. The hypochondria, and sometimes the whole abdomen is inflated, sometimes the hypochondria and the abdomen are preternaturally collapsed. The skin is usually dry and withered, or damp and greasy—constricted or relaxed ; it is sometimes yellow as in jaundice, sometimes dusky green like a spanish olive. At a certain period, generally about the fourteenth day from the commencement of indisposition, the seventh from the change in the nature of the symptoms, the action of the vascular system expands ; and crisis, more or less perfect, takes place,

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CHAP. I. characterized by hypostatic urine and sweat, sometimes by alvine evacuation—biliary, yellow and feculent—sometimes biliary, black and copious. Farther, instead of terminating finally, the malady sometimes undergoes a slight alteration in form and proceeds through another—even through several revolutions. When this is the case, or wherever the duration is protracted, the structure of the principal organs in the abdominal cavity is more or less changed: the recovery of health, even when the process is begun which points to recovery, is slow in progress and rarely perfect in effect:—this is more particularly the case in subjects of the lymphous temperament.

Action transferred.

The action of the gastric fever generally continues on the same base, but not always: sometimes it is transferred entirely to another series, sometimes only partially. In this manner, the gastric symptoms being suspended, the morbid action appears on other parts—generally the sentient, sometimes the organs of locomotion, sometimes the organ of intellect. The modes are various. In one, the moving power is ticklishly balanced; the subject, incapable of originating effective movement itself, even scarcely sustains to be moved by foreign aid; hence fainting, tremors, inability to speak or to swallow. In another, irritability is excessive, so great that the subject is hurried by slight causes into subsultus and general convulsion. In a third, the whole force of the disease is manifested on the organ of intellect; hence delirium of various de-

scription, watchfulness, coma, &c. And farther, instead of an entire transfer of action from one part, or series of parts to another, the sphere of the primary disease is sometimes only extended: in such case, the organ of sense or intellect is affected collaterally, the dominant action still remains on the gastric system.

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Dissection.

The dissection of those persons, who die of the form of fever termed gastric in this sketch, shows distinctly enough, for the most part, that the principal operation of the morbid cause is exerted on the organs which are contained within the abdominal parietes. The appearances are various, as might be supposed, in correspondence with the constitutional temperament of the individual. The peritonæum and its expansions are principal subjects of the morbid action; hence the peritonæum is often found to be preternaturally dry and shrivelled, dingy or yellow through all its extent, more particularly in persons of the serous temperament. The omentum and all the omental appendages are shrivelled and dry, and of a dusky colour. The omentum is sometimes changed in a singular manner into a red, thick and fleshy substance which sends out numerous elongations, sometimes so disposed as to form bands or swathes that occasionally compress the intestinal cavity, even to such extent as to obstruct the passage. Congestion, or apposition of new matter is often deposited in the interior of

CHAP. I. the more spongy organs, especially in the liver, between which and the contiguous parts there is also, on many occasions, more or less of adhesion. The morbid appearances are frequently mixed, viz. suppuration in one part, congestion or adhesion in another, so complicated as to present masses of diseased structure throughout, more especially where the disease has been of a protracted course. The coats of the intestinal canal are often changed in structure, the coats of the great intestines often thickened through all their extent, the internal coats sometimes ulcerated extensively, on other occasions, gangrened, or in progress to gangrene.—In short, the appearances on dissection generally exhibit the effects of prominent local action in almost all the parts contained within the abdominal cavity,—suppurative, congestive, constrictive or excretive according to the temperament and dominance of the existing action—more local or more general, that is, manifested on one series of parts principally, on a whole organ, or on several contiguous organs.

CURE.

The cure of gastric fever, though more or less complicated, is directed in all its stages by the general principle assumed in this work as the base of medical practice, viz. arrest of diseased action by one set of means, and excitement of action analogous to that of health by another. The means,

through which this end is attained, have been already explained and adjusted to the cure of general fever in its different conditions; they are applicable to the present with more or less modification. The base of the diseased action is here more distinctly local: the subversion of the base is preliminary to cure, that is, the first step in the proceeding.—I shall endeavour to explain the application in as few words as possible.

In the first place, if the patient, whether of the sanguine, lymphous, or serous temperament, be submitted to medical care at an early period, that is, within twelve hours from the commencement of indisposition, the body is to be immersed in a warm bath of moderate temperature, rubbed with soap and scrubbed with brushes over its whole surface, but more particularly on the epigastric and abdominal region. When the skin is freed from impurity, its sensibility being augmented by the heat of the bath and by friction, a vein is to be opened in the arm and blood abstracted, while the body is under immersion, to such extent as the circumstances of the case indicate, viz. until there be evidence of change in the form and character of the febrile act, whether indicated by faintness or actual fainting, evacuation upwards and downwards, general relaxation of excretaries, expansion, or other change in the condition of the pulse, sensations of ease and freedom; and, more particularly, by absence of uneasiness in the epigastric region and in all parts contained within the abdominal parietes.

CHAP. I. Three-quarters of an hour, even an entire hour is not too long for immersion where the surface is strongly constricted, half an hour may be sufficient in others. It is indispensable that the local morbid act, which characterizes this form of disease, be totally subverted, that the tide of circulation be solicited to the exterior, and that vascular action, when thus equalized, be maintained in equal tenor throughout the system, even that it be artificially directed to the surface and supported in an especial manner in the excretaries of the skin. Hence, when the patient is removed from the bath, wiped dry with linen towels, and afterwards rubbed dry with flannels heated at the fire, it is moreover essential that the skin be rubbed with warm oil or volatile liniment, as mainly conducive to the purposes of cure. The diseased action, subverted by the proceeding here stated, is liable to recur ; and, preventative of recurrence, it is proper to employ certain means of impulse which give extra activity to the function of parts that are situated in the abdominal cavity. Among the means employed on this occasion, the emetic may be reckoned one of importance. The emetic is safe after preparation of the subject by bleeding and bathing ; and it is useful, not simply as evacuating what may be offensive, but as exciting new and effective action in the parts upon which the disease principally acts. The purgative presents itself as a remedy on the same ground of reasoning as the emetic ; and, of the various kinds employed, jalap, with calomel and a few grains of James' powder, is one of the

best. The operation is facilitated, and the effect rendered more extensive by dilution with saffron tea or other agreeable aromatic infusion ; and, on particular occasions, by the addition of salt of wormwood or muriate of ammonia in repeated doses. These rank among the securities against recurrence : a further security is derived from the action of blisters applied to the whole of the abdomen, at least to the epigastrium.

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If these means be applied in time, and if they be applied under a proper discrimination of circumstances, there is reason to believe that the disease, if not absolutely arrested, will be so changed in its nature as to leave no cause for apprehension on account of its dangers. The gastric fever often requires blood letting, and it sometimes requires it to great extent. We do little or nothing towards the cure, if we stop short of subverting the base of the irregular action ; and, as abstraction of blood is the chief remedy by which we can expect to subvert it, it is necessary that it be applied with effect. Three pounds, abstracted in the manner recommended above, will generally be sufficient to assure it. But, as absolute quantity cannot be defined by prescription in this case, it is necessary to try—to proceed experimentally and to ascertain, in the course of proceeding, that the morbid foundations are actually moved before the remedy be dismissed.—Where the omentum and its appendages are materially implicated, the quantity required is great—almost extreme ; and the difficulty of judging the measure

CHAP. I. is great, for the ostensible symptoms rarely indicate what is necessary to be done.

Advanced Period.

If the disease be advanced to a late period, viz. to the fourth or fifth day, before it is submitted to medical care, though the principle which directs the cure and the means which effect it continue unchanged, considerable modification becomes necessary in the rule of applying them. The gastric fever, as a form of disease prominently local, does not proceed to a regular and final termination by a process of the whole system. The gastric action has a tendency to vitiate the secretions of particular organs, to form local depositions or congestions; and, instead of terminating by open and decided crisis through the skin, it has a disposition to subside in a state of imperfect health. If this be so, it is evident that the existing form of action must be changed by means of art at whatever period the case may be presented; for, if left to itself, there is no prospect of a speedy recovery, and little chance of a perfect one.

The first curative step is here the same as in the earlier stage, viz. immersion in a warm bath of moderate temperature; frictions of the skin, and particularly of the abdomen while the body is immersed; abstraction of blood—not to the same extent as at the early period, but still to such extent as to act on the base of the disease, and thereby to lay the case open to the action of other remedies. When the patient is removed from the bath, rubdry with flannels heated at the fire, friction with

warm oils or volatile liniment ; and, when the friction is finished, adjustment in a warm and well aired bed with sufficiency of covering constitute the first step in the point in the cure. As the main cure consists in turning the tide of circulation to the exterior, in maintaining it there, and thereby disengaging the interior organs, the warm bath and abstraction of blood, while the body is immersed in the bath, are to be repeated, as often as appearances indicate that the forward process begins to languish. The act will be aided and the effect assured by the application of blisters to the epigastric region, even to the whole of the abdomen. If the force of the disease be principally exerted on the secreting surfaces of the intestinal canal ; an emetic, and, after the operation of the emetic, a purgative is of eminent service, more particularly if twenty or thirty grains of powder of charcoal be joined with it. On the contrary, if the principal action of the disease be manifested upon the peritonæal coat of the intestines, the omentum and its appendages, or the interior substance of the larger organs, the effect of the emetic or purgative is very equivocal —not always useful. The remedy consists in such case in abstraction of blood, warm bathing and friction, blisters applied in succession to the epigastrium and abdomen, dilution by means of alkalized drinks, muriate of ammonia, &c. new forms of action induced in the organs of secretion by calomel or other mercurial preparation, with diaphoresis excited by antimonials and other means which

CHAP. I. move and maintain an active circulation in the surface and extremities. When the force of the morbid act is removed from the gastric system, the circulation equalized by the means here recommended, aromatics and tonics, viz. bark, powder of arnica ; and, at suitable intervals, acetated water of ammonia, muriate of ammonia, with such other addition as particular circumstances may indicate, rank among the means which prevent recurrence ; and thereby assure recovery, more especially as assisted by daily gestation in spring carriages in the open air.

Complicated Condition.

Further, if the disease be not submitted to medical care until a very late period, viz. the tenth or twelfth day from the commencement ; and, if the febrile act be still prominent in the gastric system, the cure is difficult. It cannot in fact be conducted to a safe issue except through a tedious process, every step of which must be directed with care and circumspection. If the tongue be black and dry, covered with a sooty coloured pellicle; or if it be dry, red and glossy, the skin dry and parched—withered and harsh, or damp, greasy and inelastic, the eye surcharged with red veins—the white of a deep dingy yellow, the abdomen inflated, the hypochondria distended—impatient of the touch, or of pressure, &c. the disease may be considered as more or less complicated in its condition. If the disease be complicated, the first step, towards removing it, obviously consists in simplifying it : the principal means of effecting simplification consist in

bathing and bleeding. Though there be sufficient evidence in experience that blood may be abstracted largely, and with safety in the late stages of fever ; yet it is not here recommended that the abstractions at one time be large : it is however necessary that they be repeated frequently, and even carried to such extent at one time as to act impulsively on the organic condition. Besides bathing and bleeding, frictions of the body generally, and of the abdomen more particularly, rank among useful remedies in the case under view. Calomel, or other preparation of mercury, administered with a view to excite salivation, daily gestation in the open air in spring carriages, the juice of deobstruent herbs, viz. dandelion, scurvy grass, endive, &c. dietically, and occasional purgatives of the deobstruent class constitute the principal means of remedy. Where the epigastrium is tense and painful to the touch, the distention temporary as proceeding from inflation, the purging tincture of aloes and myrrh, with half an ounce or more of rectified oil of turpentine, moves the bowels with effect, and generally removes the tension more effectually than any other remedy that is known to me. Ablutions with cold water by means of the sponge are generally refreshing—and they are upon the whole salutary : complete affusion is not a safe or useful remedy prescribed where there is cause to suspect internal congestion ; it is not recommended in the present case.

If the gastric fever be attended from the beginning with symptoms of nervous irritation, viz. tre-

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mors, startings, spasms, convulsions, delirium ; or, if symptoms of this description supervene at a late period, the person who has duly considered what has been said in the preceding pages will not, it is presumed, be embarrassed as to the manner in which he must act. In the earlier stage, abstraction of blood ; and, after abstraction, an emetic of severe operation often entirely removes the nervous irritations, spasms, and even delirium, more especially as aided by the affusion of cold water on the head and shoulders. The nervous irritations, alluded to, appear to depend in a great measure on certain modes of derangement in the biliary secretion that we cannot appreciate correctly ; at least they often cease, after copious evacuation by vomit and stool has been provoked by antimonial emetics. Where the irritations are violent, whether corporal or mental, tincture of opium—to the extent of eighty or one hundred drops, with camphire, James' powder and valerian in large doses also, often has the effect to allay them, provided there be no extraordinary congestion or fulness in the vessels of the brain. Opium is of value ; but ten or twelve grains of pure cobweb, given in pill or bolus, is more certain and more constant in its effect. Where the nervous irritations make their appearance at advanced periods, the curative process moves under the same principle ; but it requires to be conducted with more caution in so far at least as regards abstraction of blood. Emetics are sometimes beneficial in cases of torpor and coma :

purgatives of brisk operation are considered by CHAP.
most as of chief dependence. Blisters to the head I.
and to the nape of the neck generally stand among
the prescriptions of physicians; and, if the subject
has been properly prepared by previous evacuation,
they contribute materially to safety. In cases of
extreme weakness, inability to move, or to bear to
be moved without danger of fainting, a condition
not unfrequently connected with gastric fever in its
latter stages, sponging, or aspersion of the body
with cold salt water, even affusion of cold water in
tropical latitudes, is safe, refreshing and invigora-
ting; but though useful, gestation in the open air
in a suitable carriage is, of all others, the most im-
portant, the safest and the most effectual remedy,
in the delicate and alarming condition of gastric
fever here alluded to, of which I have knowledge.

CASE I.

Jamaica, *July 28th, 1815.*—David Buchanan, 18th regi-
ment of foot, aged 30, of a spare habit, has been three or four
years in the island, and latterly employed as surgery man in
the hospital, attacked yesterday with chilliness, nausea and
uneasiness at stomach. The pulse is now frequent; the skin
hot and dry; the tongue moderately clean; the body costive.
An emetic, administered this morning,—a good deal of bile
ejected. Two o'clock,—bled to the extent of twenty ounces;
purging powder. Evening,—somewhat relieved after the blee-
ding; bowels not moved: purging powder repeated. *29th,*—
much pain in the head and back; pulse quick and rather full;
skin cool; tongue clean. Bled to sixteen ounces. Evening,—
head-ache less severe; skin rather hot and dry; pulse soft—
about 80 beats in a minute; body open; thirst urgent: nitre,

CHAP. antim. and camphire every two hours. *30th*,—slept pretty well; no head-ache; slight pains in the back; pulse frequent and rather feeble; skin natural; body costive, tongue foul: salts. Evening,—the salts having had no effect, jalap and crystals of tartar were ordered about noon—some evacuations procured. The camphire, nitre and antimony continued—with thirty drops of tincture of opium at bed time. *31st*,—seems better; no fever: decoction of bark with camphorated mixture—and also a pill of calomel and antimonial powder every two hours. *August 1st*,—restless in the night: vomits every thing; pulse frequent and small; skin dry—not hot; evacuations by the bowels ineffective. Blister to the epigastrium: purging pills. Evening,—much the same as in the morning; the purgative has had no effect; pain and tenderness of the abdomen when pressed; strangury troublesome; purging injection; fomentations to the abdomen: a pill of calomel, opium and ginger every other hour. *2nd*,—strangury relieved; other symptoms continue. The calomel, &c. continued with effervescent draughts occasionally. Evening,—no evacuation from the bowels: purging injection. *3rd*,—very weak; no ostensible fever; body costive: purging injection repeated: decoction of bark; camphorated mixture and Madeira wine, each, an ounce and a half, every hour. Evening,—seems better; body open; skin cool and moist; thirst urgent; no head-ache; no nausea: medicines continued. *4th*,—seems better; medicines continued. Evening,—much worse; vomits every thing; weakness extreme; pulse very feeble; one copious stool after the injection: saline draught with camphorated mixture, spirit of lavender and aromatic powder. *5th*,—some sleep; seems rather better; pulse very frequent; skin cool and open; body rather costive: purging powder, and, at a short interval after it had been taken, a purging injection. Evening,—confused and delirious since noon: blister applied to the head; three purging pills; now insensible; has had several evacuations by stool of a natural colour; pulse frequent and feeble; skin warm and open. Decoction of bark, camphorated mixture and wine continued. *6th*,—the delirium continued all

night, and still continues; the pulse very small and feeble; the skin cold and clammy; four or five stools of a natural colour: decoction of bark, &c. continued with a pill of capsicum and two grains and a half of opium. Evening,—no material alteration. 7th,—died at six in the morning. *Dissection of the body.*—A portion of the dura mater, the size of a shilling under the left parietal bone, inflamed and adhering to the cranium; the vessels turgid—no extravasation; the choroid plexus flaccid—deficient of blood; the usual quantity of fluid in the ventricles. The lungs were of an unusually small size; the right lung adhered to the pleura—in appearance the effect of former disease. The abdomen was tense; the stomach, when opened, was empty; the intestinal cavity was inflated throughout its whole extent—with some marks of inflammation in different parts of the colon. The gall bladder was distended with dark coloured bile: the other viscera bore no particular marks of disease.

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## CASE II.

Jamaica, May 14th, 1815.—Abraham Trembling, R. Artillery, attacked about three in the afternoon with rigors, pain of the head, back and limbs. The pulse is now, (evening) quick and strong; the skin hot and dry; the tongue clean; the body regular. Forty-eight ounces of blood abstracted from the arm,—faintness ensued. Calomel gr. vi., jalap gr. xxx. 15th,—the vein burst open during the night, and the blood continued to flow until faintness came on. The bowels have been moved twice; the pain of the head continues, but with less intensity; the pulse is full and intermitting. Bled again to the extent of forty ounces,—he became faint: a draught of æther with camphorated mixture. Noon,—pain of the head nearly gone; several evacuations by stool; skin cool; pulse moderate: sodæ sulphat. oz. i. in aquæ font. lb. ii.,—a wine glass full every hour. Evening,—the head-ache returned about three o'clock; the skin is very hot; the pulse frequent and irregular—intermitting: thirty ounces of blood abstracted. Fainting induced:

CHAP. a draught with æther and camphorated mixture administered ;  
 I. and a blister applied to the nape of the neck. 16th,—slept pretty well; tongue clean; pulse 96 and regular; skin cool and rather moist; pain still felt at the fore-part of the head; about an ounce and a half of blood flowed from the nose. Blister applied to the crown of the head : calomel gr. vii. Evening,—the nose bled a second time; the head is easier, and the bowels have been moved three times; skin perfectly cool, —not cold. 17th,—skin cool; pulse moderate; tongue moist: decoction of bark: sago with wine: porter. Evening,—about three in the afternoon slight increase of heat; a copious evacuation by stool after a clyster: anodyne draught at bed time. 18th,—skin cool; pulse 86 and regular; slept soundly: decoction of bark, &c. continued. 19th,—two or three evacuations by stool last night in consequence of a clyster; he notwithstanding slept well; no fever: medicines and diet continued. 20th,—strength increases: medicines and diet continued: three bottles of porter in the course of the day. 21st,—convalescent: half diet. June 6th,—discharged.

## CASE III.

Jamaica, July 14th, 1815.—Jennings, R. Artillery, aged 39, seized, about an hour before he was admitted into hospital, with symptoms of violent fever:—much pain of the head and limbs, great heat of skin, pulse very full. Fifty ounces of blood abstracted immediately: calomel and jalap. Evening,—fever much abated; no effect from the calomel and jalap: solution of salts. 15th,—febrile symptoms nearly gone; pulse regular; the bowels have been freely opened. Solution of salts taken at intervals through the day. 16th,—convalescent. 18th,—discharged.

## CASE IV.

Barbados, September 22nd, 1814.—Luke Mordaunt, R. Y. Rangers, aged 26, admitted into hospital in the morning, complaining of severe head-ache, pain at the stomach and in the

loins: the pulse quick and full; the skin hot; the tongue foul; body open; thirst urgent. Calomel and rhubarb immediately: bled to the extent of three pounds. Blisters to the head, temples and stomach. 23rd,—calomel and rhubarb repeated; castor oil likewise; six or seven dark coloured stools: head-ache and pain at the stomach relieved; pain of the loins diminished; pulse moderate; skin warm and dry; tongue foul; thirst abated. Calomel gr. ii., James' powder gr. iv., every fourth hour: effervescent draughts: tepid bath. Noon,—free from pain and free from fever: two ounces of infusion of bark every hour. Compound powder of ipecacuanha gr. xv. at bed time. 24th,—no fever: medicines continued. Evening,—accession of fever about four o'clock in the afternoon. Costive,—solution of salts with tartarized antimony and purging clyster. Eight o'clock,—one stool from the medicine; pulse very frequent, hard and full. Bled to three pounds,—tepid bath. 25th,—six or seven stools; pulse frequent and strong; skin hot and dry; tongue foul and moist; thirst intense. Calomel and James' powder repeated with a draught of aq. ammon. acetat., spirits of nitre and a small portion of tartarized antimony every other hour: tepid bath: bled to the extent of twenty ounces. Evening,—some tranquil sleep,—sweated copiously; pulse moderate; skin warm; body open: tepid bath and compound powder of ipecacuanha at bed time. 26th,—sleep of short duration only; pulse moderate; skin warm—now dry; tongue foul; thirst abated; body open: medicines continued; tepid bath: (ten o'clock) fever declined. Two ounces of infusion of bark with half a dram of aromatic spirit of ammonia every hour: (two o'clock) skin hot,—bark omitted. The body costive,—castor oil, and at a short interval, the castor oil not having operated, a dose of jalap and calomel,—it acted effectively; fifteen grains of compound powder of ipecacuanha at bed time. 27th,—good rest; pulse moderate; skin warm and dry; tongue foul; body open. Calomel and James' powder with a diaphoretic draught of acetated water of ammonia every other hour; tepid bath; compound powder of ipecacuanha at bed time. 28th,—good sleep; fever gone; gums hot and painful. Infu-

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## CASE V.

Berbice, *August 6th, 1814*.—Luke Pavoenne, aged 26 years, of a spare habit, attacked this morning at nine o'clock with a paroxysm of fever, and brought to the hospital in the course of the day. Evening,—pain of the back and limbs; no head-ache; the skin moist; the pulse soft—90 in the minute: purging pills. 7th,—fever came on in the evening and continued all night; the skin now dry; the heat considerable; the tongue very foul; much vomiting during the night; the stomach still irritable; the pulse 130—and strong; head-ache; two motions downwards: bled—six ounces only obtained. 8th,—head-ache; frequent vomiting; pulse 120—small and hard; tongue much furred; two motions downwards; skin rather moist; effervescing draughts at short intervals; a drachm of bark every other hour during the remission. Evening,—during the remission, perspired a little and took some doses of bark: the vomiting has returned; the skin is dry; the pulse quick and small; no material head-ache: tepid bath; diaphoretic draught. 9th,—pain of the head; eye yellow; abdomen painful when pressed; vomiting frequent in the night; skin dry; pulse very small—scarcely to be felt: blister to the abdomen; one grain of opium, with two of calomel, every hour; a spoonful of brandy every two hours; common elyster. Evening,—skin cold; perspiration considerable;—somewhat comatose; pulse scarcely to be felt; a stool from the injection; three convulsive fits in the course of the day: the blister rose well; no return of vomiting: camphire gr. iii., antimonial powder gr. iv., opium gr. i.; a spoonful of brandy every two hours. 10th,—bilious vomiting in the morning; a convulsive fit in the night; the skin moist; the heat natural; the pulse cannot be counted; the tongue much furred; no complaint of pain: effervescing draught, followed by the camphire, antimony and opium,—to be repeated every third hour: injec-

tion : bark : (ten o'clock,) vomiting continues ; skin cold and moist ; pulse 130,—very weak ; no evacuation from the bowels since morning : warm bath ; frictions with warm oil. Evening,—he has remained in a state of insensibility all day ; the pulse 90 in a minute—more full and distinct ; the vomiting restrained apparently by the brandy : skin warm and moist. 11th—died in the morning at three o'clock. *Dissection.*—A quantity of fluid resembling serum at the base of the brain ; strong adhesions of the lungs with the pleura on the left side ; the gall bladder distended ; the cavity of the stomach and intestines overflowing with bilious matter ; the spleen enlarged and adhering to the abdominal parietes, which were considerably inflamed in several places near the adhesion ; the internal coat of the intestinal canal was likewise inflamed in more places than one.

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## SECTION II.

### B. *Fever in Choleric Form ; that is, a Choleric Form of Disease arising from the Action of a Febrile Cause.*

Besides the gastric, there is another form of febrile action, manifested on the organs which are contained within the abdominal parietes, important to be studied and understood : it is introduced into the hospital returns under the name of cholera. It occurs more frequently at a certain season of the year, viz. the end of summer and beginning of autumn, than at other periods, but it is not absolutely confined to season. It is formidable in its manner of attack ; and it is not unfrequently fatal in its termination. It consists in vomiting and purging, viz. in the forcible ejection of every thing that is secreted by the abdominal organs which communi-

CHAP. Icate with the cavity of the alimentary canal; hence a mass of heterogeneous mixture and impurity, sometimes bile—more or less pure, sometimes dirty watery fluid, is ejected by vomit and stool in such quantity as if the current of all the circulating fluids were converted upon the interior secretions. It is not a disease of long duration: it is strictly ephemeral, terminating fatally, or showing a decided fatal tendency within twenty four hours. The vomiting and purging,—the vomiting particularly is irrestrainable; the retchings are often severe, accompanied with excruciating pains and torments, deadly sickness, anguish, anxiety, thirst to excess, faintness,—even fainting, spasms and cramps of the limbs of the greatest intensity. The pulse is ordinarily frequent, small and irregular—sometimes suppressed, or not perceptible. The skin is cold, sometimes dry and of a death-like coldness—scarcely animated by the heat of a bath at 104 or 106 degrees of Farenheit's thermometer; sometimes, while cold it is damp—covered with ice-cold sweat as in agonies of pain. The countenance is haggard and collapsed; the eye, sunk and hollow, has the expression of supplicating relief.—The intensity of the symptoms remits in twelve hours or less from the time of the attack; the pulse expands; the natural heat, accompanied with sensations of returning life, revisits the surface and extremities; the spasms relax; flying pains and cramps in the limbs still continue, with feelings of exhaustion, the effect of the severe suffering that is past.

The severity of the vomiting and purging ordinarily abates, even in cases that terminate unfavourably, in about twelve hours from the time of the attack: it does not cease. Nausea, faintness, anxiety and sensations of anguish about the præcordia are still felt; the pulse continues frequent and small, sometimes so obscure as to be scarcely perceptible, or so frequent that it cannot be counted. The skin is cold—in a manner impenetrable to heat; the eye is sunk, the aspect haggard and forlorn. Death takes place, sometimes within twenty-four hours, sometimes not for two or three days, even sometimes not until after five or six. In such case, intervals of respite are observed, at least intervals of suspended progress; nothing occurs that, in ordinary language, deserves the name of remission.

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### *Dissection.*

The appearances, which present themselves on the dissection of those who die of the choleric form of fever, are principally observed in the coats of the alimentary canal and in the interior of organs of spongy texture. The inside of the stomach is often of a dark red—such as may be termed black gangrene, without marks of preceding suppurative inflammation. The inside of the small intestines presents a similar appearance; the peritonæal coat exhibits, on some occasions, the erysipelatous inflammation and gangrenous termination to great extent. The spleen and liver are distended with

CHAP. I. black and fluid blood ; the lungs have sometimes the appearance of liver ; the gall bladder is occasionally filled with black bile,—the pericardium with dirty water.

### CURE.

The symptoms which characterize cholera at the time of invasion, which continue during the course, and the traces of diseased action, which remain in the body after death, may be considered as sufficient evidence that a sudden and violent subversion of excretory function, with direct conversion of the tide of excretion upon the alimentary canal, gall bladder and other internal organs, constitutes the base of action in this form of disease. The stomach is the part upon which the morbid act is primarily and principally manifested. The evidence of the act consists in increased discharges of excreted fluid sometimes produced without violence being done to the structure of the excreting organ, sometimes produced under expressions of convulsive force which exhaust the vital energy, induce paralysis and death in the venous extremities ; and thereby form stagnations in organs of spongy texture and black gangrene in membranous surfaces.

The common method of cure in this disease is, I believe, directed to assist in the ejection of the excreted matter by an outlet, or to repress the excessive excretion by anodynes, or astringent tonics. Neither of these views accord with the idea which

I have myself formed upon the subject. A mature consideration of the circumstances of the disease in all its stages, viz. commencement, progress and termination, has led me to assume a different ground of proceeding ; and in execution of that view, instead of assisting to eject, or to repress ejection, I endeavour to counteract the effect of the morbid conversion upon the interior excretaries, by exciting a new form of action on the excretaries of the skin, a purpose effected principally by heat—moist or dry, frictions and other means of stimulation, external and internal.

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In correspondence with this view, I recommend that as soon as a person, suffering from the choleric form of febrile action in the major degree of violence, is submitted to medical care, that the body be immersed in a warm bath of high temperature—such, whatever may be the degree of heat, as gives warmth and pleasure to sensation ; for, if short of pleasurable sensation, the effect is injurious rather than useful. Independently of actual heat, the stimulating power of the bath is heightened by the addition of spirit of mustard, spirit of ammonia, and still more agreeably, if it can be procured, by some phials of *eau de Cologne*. The body is to be rubbed with brushes during immersion ; chicken water, or other agreeable liquid to be given for drink, and drank as hot as it can be swallowed —Water, that has been poured upon toasted oatmeal or burned bread, remains upon the stomach when many other forms of drink are rejected. The same may be said of milk, par-

CHAP. I. ticularly butter milk, where there is great internal heat and great thirst. After immersion in a bath of warm water, or preferably of warm steam for half an hour or more, a vein is to be opened in the arm. If the blood flow freely, it is to be allowed to flow until there be some change in the pulse, and some evidence of change in the condition of the existing symptoms of the disease. If the blood do not flow freely, the heat of the bath is to be increased, stimulating drinks and stimulating drugs given internally—the drinks as hot as they can be drank. The patient is generally easy while he is in the bath: the vomiting is often then suspended; and, for this reason, he is to be allowed to remain in it as long as it is agreeable, or until some change be effected in the condition of his case. If the blood do not flow freely in the first trial, the vein is to be re-opened at a short interval, the abstraction made with caution under the guidance of the principle already explained. I am confident of the safety of the remedy, and I am convinced of its good effects where the steps in the proceeding are made with circumspection. The purging tincture of aloes and myrrh, with the addition of oil of turpentine, taken undiluted in small quantities at short intervals, is by far the most promising among the class of purgatives. It not only assists the expulsive power of the intestine; but it seems to counteract the gangrenous tendency in the interior coats of the stomach. When the patient is removed from the bath, wiped dry, rubbed with

heated flannels, and afterwards with hot oil. Dry heat is to be applied to the surface in as perfect a manner as can be done by means of half-burned billets of wood wrapped in flannel; hot bricks applied to the feet; hot sand in bags, or hot bran laid upon the stomach and upon the whole of the abdomen; hot, stimulating and agreeable liquids being given internally for drink. If spasm, pain and anguish at stomach harrass the patient immoderately, æther, *eau de Cologne* and tincture of opium are useful. There is reason to believe that a pill of ten or twelve grains of pure cob-web would give still more immediate and more effectual relief; but I have not had the opportunity of trying it in this form of disease, not being possessed of cob-web when the more aggravated cases of choleric fever occurred. From its well attested effects in other forms of spasm and irritation, I should not hesitate to prescribe it in the choleric with confidence of its doing good.

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## CASE I.

Barbados, May 11th, 1814.—Thomas Ritchie, R. Artillery, seized yesterday with nausea, giddiness, incessant vomiting and purging; pulse small and frequent. Bled to the extent of sixteen ounces,—fainting supervened: warm bath, friction while in the bath: heat of surface not increased; circulation not affected. Calomel gr. v.: draught with tincture of opium and and æther; in an hour afterwards, a purging draught. The draught and every thing else rejected; the irritation of the stomach extreme; nothing retained, not even for a moment: bath; frictions in the bath; and, after removal from the bath, a

CHAP. draught of tincture of opium and æther. 12th,—restless; vomits every thing; pulse very small and sunk; extremities cold; anodyne draught—instantly rejected. Warm bath of sea water—temporary ease; blister to the neck and to the stomach; solution of sugar of lead in small doses—often repeated: the vomiting restrained; thirst excessive—allayed in some degree by frequent draughts of milk, which is retained. Evening,—salt water bath repeated. 13th,—slept tolerably well; no return of vomiting; pulse more expanded; more heat on the surface; bowels torpid: castor oil; salt water bath. 14th,—very restless in the night; complains of pain of the head: bath of salt water; blister to the head; draught of tincture of opium and æther. 15th,—better night; head relieved; body open: bath repeated; diaphoretic draught. 16th,—slept tolerably well: medicines repeated. Evening,—nausea and vomiting recurred, not severe. 17th,—restless; no sleep; several evacuations by stool; pulse small; great weakness: sea water bath and anodyne draught with æther. Evening,—camphire and nitre. 18th,—bad night: wine, &c. 19th—sinks. 20th,—died. *Dissection of the body.*—The lungs distended with blood, and of solidity almost equal to that of liver; the pericardium thickened and distended with fluid; the stomach inflated—the interior surface of a dark red, studded with numerous gangrenous spots;—the intestines in a similar state—gangrened in many places; the gall bladder distended with black viscid bile; the spleen distended with blood—three times its natural size—rotten: pancreas rotten and diseased.

## CASE II.

Barbados, October 22nd, 1814.—C——n, R. Artillery, seized last night with sensations of deep coldness, vomiting and purging, cramps in the limbs and other sufferings. He was brought to the hospital in the morning; the vomiting was then incessant; the countenance livid; the eye sunk; the pulse scarcely perceptible; the thirst excessive: put into a warm bath; a vein opened in the arm;—the blood flowed so reluctantly that the

quantity of twenty-four ounces only was obtained. The pulse was scarcely perceptible; the skin cold, livid and damp—not susceptible of warmth from the bath; vomiting irrestrainable; æther, laudanum, and every thing that was tried was rejected, except milk, which was retained for a while. He was rubbed with hot oil,—oil of turpentine, camphire and ammonia; flannel bags with hot sand were laid upon the stomach, abdomen, and applied to the extremities. Evening,—easier; less thirst; pulse perceptible—frequent but irregular; has not vomited since three o'clock. 23rd,—no vomiting since yesterday; several evacuations by stool,—the effect of purging tincture of aloes and myrrh with oil of turpentine; thirst abated; rested in the night; skin warm; pulse distinct—not weak; eye and countenance comparatively cheerful. Evening,—no appetite; eye and countenance improve; pulse distinct—not weak; skin warm; sensations of weakness. 24th,—slept in the night; much better; no vomiting; the tongue moist—black, as if covered with powder of charcoal none of which he has taken; pulse regular—nearly natural in frequency and force; eye and countenance improve. 25th,—slept the whole night; some return of appetite; no thirst. 26th,—better:—recovered.

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### SECTION III.

#### C. *Dysenteric, or Intestinal Disease arising from the Action of a Febrile Cause.*

The dysenteric, or intestinal form of fever is the most common, and one of the most important of the maladies that occur among troops, particularly among the troops which serve in the West-Indies. There are some of the islands in the Charibean cluster in which it amounts to one half, even to more than one half of all the forms of acute disease which

Locality.

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I. appear in the hospital return of sick: there are others, particularly the moist and level of high but equal temperature, where it scarcely amounts to one tenth. It is moreover rare where the local endemic is of the higher grade of violence; especially in the more unhealthy stations on the sea coast in the unhealthy seasons of the year. In many of these it is scarcely ever seen: it is on the contrary common in broken and hilly districts; especially in such as are intersected by ravines, and thereby exposed to vicissitudes of temperature, viz. calms and sudden gusts of wind. It is more frequent in cool and dropping weather than in sultry seasons and under heavy rains. It is thus more common, in spring and the beginning of summer, than in the latter end of summer and beginning of autumn. But, though generally influenced by season, it is notwithstanding sometimes epidemic—not in the usual season—at least, a very malignant and a very fatal form of it has occurred occasionally, within the author's experience, in the spring months in unusually dry weather, particularly in situations, whether low or elevated, which were struck by currents of piercing and parching winds descending, from interior mountains, through ravines as through a funnel.

Forms.

The dysenteric form of disease, as variable in degree of force, is also variable in mode, viz. from simple and slight diarrhea to complicated and severe dysentery. Diarrhea, or simple purging, is common as a mode of action from the influence of a febrile

cause in the islands of the West-Indies; and, as such, it sometimes continues for a length of time without materially affecting the health, or apparently diminishing the strength of the subject. Where diarrhea obtains, whether sporadically or epidemically, the severer forms of fever are rare; hence diarrhea is considered, particularly among persons recently arrived in intertropical climates, as preservative of health, at least as affording, during its continuance, more or less of security against the attack of febrile diseases of the more concentrated form. The dysenteric disease differs, as now stated, in force and mode of action: it also differs, as will be afterwards explained, as being primary and original, or secondary and consecutive; that is, the consequence of ill-cured fever—endemic or contagious.

The intestinal form of febrile action occurs under different temperaments, viz. sanguine, lymphous or serous. The symptoms are different in degree of force, and different in character according to the nature of the part, or series of parts on which the action is principally manifested, viz. one coat, or all the coats, the intestine simply, or in conjunction with other organs within the abdominal cavity.

1. The milder and simpler form of dysentery, the action of which is manifested principally on the mucous membrane, often begins simply by increased purging accompanied with griping. The stools are liquid, but feculent; sometimes slimy, rarely bloody; the nights are tranquil at one time, the

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Simple or  
complicated.

Mucous or  
simple  
Form.

CHAP. I. days at another, the symptoms so little urgent that the whole number of motions do not perhaps exceed six or eight in twenty-four hours. The appetite is sometimes impaired, sometimes not materially: the thirst is generally greater than natural; the tongue is sometimes foul, sometimes not much changed from its ordinary appearance. This is the simpler and slighter degree of disease: in another, somewhat differently modified, irksome sensations in the lower bowels, accompanied with more or less of pain and desire for the night chair, give the first indication of indisposition. The stools are small, ineffective, slimy—often pure slime without feculence; sometimes slime with feculence, and, on some occasions, with mixture of blood. Thirst is more than natural; the appetite is impaired; the skin soft; the heat moderate; the pulse little changed. The symptoms increase; and, from small beginnings, the indisposition gradually assumes the form of dysentery accompanied with more or less of fever. But though the disease begin, in numerous instances as here described, it also often begins as a disease distinctly febrile from the first attack, sometimes sudden and violent, sometimes gradual and moderate, but still febrile. The commencement is marked with more or less of cold and shivering, at least with sensations of horror and creeping, sometimes with sickness, vomiting and pain, faintness, languor and depression of spirits. The desire for the night chair is urgent, tenesmus intolerable, the evacuations small and ineffectual:

gripping is often severe, with irksome and unpleasant sensations about the rectum ; sometimes the evacuations are copious, offensive, fetid, mucous and bloody : the blood is sometimes pure and in streaks, sometimes dark and more equally mixed—the smell faint and sickly :—dysury is not an uncommon symptom, though only a contingent one. The tongue is ordinarily foul, sometimes moist, sometimes dry. The skin is hotter than natural,—sometimes harsh and dry. There is no appetite for food; sometimes there is aversion from every kind of sustenance. The pulse is febrile, generally regular—not hard or contracted.

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The description, now given, applies to the simpler form of disease, as it acts on the mucous membrane, before ulceration is formally established in the interior coats of the intestine. After a continuance of seven or eight days in this form, the primary action abates or ceases ; health is gradually restored, or the acute stage is superseded by the supervention of changes in organic structure which constitute the form termed chronic. The changes alluded to take place in the interior membrane : they advance progressively to disorganization ; and they terminate in ulceration of the great intestines of more or less extent and of different character, sometimes foul and fungous, sometimes corroded and putrid. Where local ulceration is established, general febrile irritation subsides ; the evacuations by stool become even less frequent ; sometimes they are copious, sometimes scanty and mucous, sometimes mixed with blood,

CHAP. I. with purulence or other matters which belong to foul secreting surfaces. Tenesmus, which was distressing at the early period, is now moderate; appetite for food returns; thirst abates; the nights are often tranquil; and appearances not unfrequently arise which give hopes of recovery. They are however for the most part fallacious and of short duration. The flesh begins to waste; the skin becomes dry and harsh; the purging ceases and recurs at intervals; the termination is sometimes protracted for years; the subject during all this time is invalid, valetudinary and miserable in himself.

Complicated Form. 2. The more complicated form of dysenteric fever, where all the coats of the intestinal canal partake of the morbid act, commonly begins suddenly. It usually commences with horror and shivering, headache, nausea, vomiting and retching—more or less severe. Its commencement is sometimes marked by severe excruciating pains in the bowels, sometimes by spasms like those of *colica pictonum*, sometimes fixed, sometimes moveable like griping. The evacuations by stool are sometimes copious and watery, sometimes small, watery and ineffective—irregular or by starts, accompanied by a sense of stricture or want of power to effect what is desired. The irritability of the interior surface of the canal is generally great, sometimes so exquisite that the mildest liquid received into the stomach urges instantly to the night chair. Where that is the case, the evacuations are for the most part watery—sometimes copious, sometimes scanty. The simpler form of the

disease often begins, as already said, in the lower part of the canal. The complicated begins more commonly in the superior, descending progressively and in succession to the inferior; where, if it assume the chronic form, it fixes in the colon and rectum. Pains, spasms, gripings and twistings are often distressing in the early stage—sometimes scarcely supportable. The abdomen is sometimes superficially tender of the touch; that is, pressure, as it bears upon or moves the internal parts, occasions considerable uneasiness, so as to give suspicion of the existence of peritonæal inflammation or other internal derangement. Sensations of heat at the epigastrium are often preternaturally increased, together with the impatience of pressure now alluded to, and the organ of urinary secretion is often so much implicated in the suffering that the urinary discharge is in a manner suppressed. The skin is usually dry and harsh; and, in very dry weather under exposure to parching winds, it is sometimes withered and dry like parchment: where this occurs, the progress to death is rapid. The heat of the skin is ordinarily sharp and acrid—the impression disagreeable to the hand that touches it. The tongue is generally dry, often foul, sometimes clean—with a blush of erysipelatous redness. Thirst is always increased beyond what is natural; sometimes it is intense. The feeling is altogether uncomfortable; irritability and despondence are prominent symptoms. The pulse is usually small and frequent; sometimes hard and tense, striking the finger as if

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CHAP.  
I. the artery were wire or whip-cord; it is sometimes small, feeble and obscure. Instead of watery evacuations by stool—copious or scanty, there sometimes occur copious discharges of blood—pure or mixed, often pale pink coloured, and of an offensive smell.

The above symptoms characterize the disease at its forming state. They are generally observable on the first or second day. They increase progressively, and sometimes so rapidly that life terminates within the eighth or tenth day, even earlier. Thirst is then generally urgent; the tongue is rough, often covered with a black pellicle; sometimes it is clean, red and glossy. Heat is high at the præcordia, diminished at the extremities. The eye is often glossy—the white of a pearly whiteness. The pulse is ordinarily of great frequency, sometimes small and intermittent. Hickup is not unusual: the abdomen is sometimes inflated—sometimes collapsed; dysury or suppression of urine is common. Tenesmus is troublesome, but generally less urgent than in the simpler form where the seat is chiefly in the mucous membrane. The evacuations by stool are watery; they are sometimes interspersed with dark coloured flakes so as to appear muddy; sometimes they resemble water in which butcher's meat has been washed. The intellect is disordered in most cases for a short time before death. The term of the fatal termination is uncertain. It happens in the more aggravated within the tenth day, in the less aggravated, whether na-

turally so or rendered so by the interference of art, within the fourteenth. If the disease terminate favourably, it either terminates critically somewhat in the manner of a febrile disease ; or it terminates by conversion upon parts of inferior vital importance, there establishing a mode of local action, the duration of which is protracted and the final issue of it not easily calculated.

CHAP.  
I.*Dissection.*

The first, or simpler form of dysenteric fever, is rarely fatal during its acute or febrile stage. The second is a disease of so great danger by its immediate act as to terminate fatally at an early period—sometimes within ten days—often within a fortnight or three weeks.—The following appearances are usually observed in dissection of the dead body. The stomach presents, for the most part, appearances of vascularity beyond what is natural. its interior surface is sometimes besmeared with whitish matter, neither exactly pus nor mucus ; the villous coat is often thickened—loose and spongy ; blue streaks, or livid patches are frequently seen underneath. The interior of the intestinal canal has an appearance similar to that noticed in the interior of the stomach ; and, where the disease has been of a protracted course, thickening of the interior coats, separation of the coats, ulceration and even gangrene are commonly observed in the whole tract of the colon, and very often in the rectum.

CHAP. I. The peritonæal coat of the intestines is often much inflamed ; and adhesions are formed in many cases between the parts as they touch in their convolutions. Sometimes, instead of exudation and adhesion, the surface is dry and withered—of a dirty grey olive colour; or dry, black and gangrened. The omentum is sometimes dry and shrivelled, resembling a dirty linen rag ; sometimes it tends to gangrene ; sometimes it produces a new and fleshy looking substance which sends out elongations, which occasionally confine and compress the intestine in such manner as to impede passage through the canal. The interior surface of the canal is sometimes red—erysipelatous ; sometimes the inner coat is abraded—the cavity filled with bloody mucus, or dirty watery fluid.

### CURE.

The cure of dysentery is a subject upon which much has been written, and on which writers manifest great diversity of opinion. I have not the means of forming an analysis of these opinions, so as to attain, from such analysis, a general principle for the direction of practice ; and, if I had the means, the limits of this sketch do not admit of a detail of it. I shall therefore satisfy myself with stating my own view of treatment in the different stages and various forms under which the malady has appeared to me, discriminating the circumstances of condition in so far as I am able to discriminate them, and com-

prising what I have to say in as few words as I can comprise it.

CHAP.  
I.

1. In the form of dysenteric fever which acts principally on the mucous membrane, the principle which directs the method of cure is the same, whether the disease be mild or aggravated ; the measure in the quantity of means differs. The cure here, as in other cases of disease, consists in total subversion of the diseased condition, with reproduction of a condition analogous with that of health. With a view to attain that desirable object, it is recommended, in the first place, that the patient be immersed in a warm bath of moderate temperature, that the skin be rubbed with soap and scrubbed with brushes, that a vein be opened in the arm while the body is under immersion, and that blood be abstracted in quantity sufficient to diminish tension and remove interior congestion. It is not always necessary to abstract blood in this form of disease ; but it is always safe as done under the eye of a medical officer of discernment, and it is generally useful ; inasmuch as the diminution of blood, by increasing the susceptibility of the system, contributes materially to render the operation of other remedies effectual. When the patient is removed from the bath, wiped dry with linen towels, rubbed dry with flannels heated at the fire, disposed in bed and properly covered with bed clothes, a pint or more of warm tea with thirty or forty grains of prepared kali is to be given immediately, followed, at an interval of fifteen or twenty minutes, by an

CHAP. I. emetic, viz. ipecacuanha alone, or with the addition of tartarized antimony. As soon as the operation of the emetic is finished, a purgative, viz. calomel gr. vi., jalap gr. xv., rhubarb gr. xx. is to be administered in bolus, and worked off by very thin chicken water, or rice water in which a few grains of kali are dissolved. If the patient be permitted to rise up to the night chair, woollen stockings or socks, listen slippers and a flannel night gown are indispensable provisions against the chances of injury from the impressions of cold floors, or sharp winds. Besides the means now recommended, as constituting the basis of the cure, considerable benefit is obtained from the application of a piece of flannel over the abdomen, such pressure being added by means of a flannel roller as makes impression on the interior parts. If tenesmus be urgent, with heat and pain at the fundament, partial immersion in a tub of cold water, washing lavishly with cold water, or bathing the parts with spirits and water, camphorated mixture and white vitriol, or solution of sugar of lead give temporary relief, if they be not of permanent benefit. These means are useful; but powder of charcoal, viz. twenty grains given by the mouth, and one drachm mixed with rice water or thin arrow root and injected by clyster, has, of all means known to me, the most instantaneous good effects in this form of disease; particularly where tenesmus, bloody and offensive evacuations are the prominent symptoms in the

case.\* The effect of the charcoal, as given by the mouth, is improved, and, I have reason to believe, rendered more permanent by the addition of ten grains of rhubarb and five of ipecacuanha. Where the subject has been prepared by previous evacuation, &c. two or three doses generally effect a cure; that is, the stools become feculent and figured; the gripings, pains and tenesmus cease; and, if due attention be paid to diet and regimen, they rarely, if ever, return. Where the disease has ceased, certain of the substances termed tonics, viz. infusion

CHAP.  
I.

\* The powder of charcoal was not known to me as a remedy applicable to the cure of dysenteric fever until the year 1814. The discovery was made by experiment, the truth of it proved by ample experience during the time that I superintended the medical department of the army in the Windward and Leeward island station. Since my return to England, numerous opportunities have occurred, among the poorer class of inhabitants of the place where I reside, of confirming what I then observed. A bowel-complaint has been frequent, if not epidemic, at Stockton-upon-Tees during the summer and autumn of 1818; and in many, it has been harrassing and obstinate to the modes of common treatment. A powder, composed of twenty grains of charcoal, ten of rhubarb, five of ipecacuanha, the proportions varied according to circumstances, never failed to give relief, even to effect a cure where the disease was originally simple, or rendered simple by other treatment. Where tenesmus was urgent, the charcoal was also given by clyster.—In all cases of diseased secretion from the interior membranes of the intestinal canal, whether in children or in adults, the effect of the powder now mentioned, was sovereign,—not less specific in this than Peruvian bark is in the cure of regular intermittents.

CHAP. I. of columbo, Angustura bark, arnica, gentian, camomile, &c., camphorated mixture with white vitriol, alum and acetated water of ammonia, given at frequent intervals, are of considerable benefit:—they contribute materially to accelerate the progress of recovery and to secure against the chances of relapse.

Complicated Form.

2. In the more complicated form of the disease, that is, where all the coats of the intestinal canal are implicated in the diseased action, and particularly where a principal share of it is manifested on the outer or peritonæal coat, the first step towards a cure is necessarily directed to an adjustment of means which simplify the condition. Among these, immersion in a warm bath of moderate temperature is the first which presents itself. It is important from its own direct operation; but it is particularly important as preparatory of bleeding and auxiliary of its good effects. Bleeding is here the sovereign remedy; and, being so, it is proper that the field be duly prepared for its effectual action. The blood, for instance, is to be abstracted while the body is immersed in the bath, the abstraction continued, whatever be the amount of the quantity, until a decided change be perceived in the circumstances of the case, viz. until gripings and spasms abate or cease, until strong pressure, even succussion can be endured without pain or painful sensation, and until the pulse, from hard and contracted, become open, free and expanded. The quantity required to produce this effect is often high, viz. three pounds,

four pounds, or more. But whatever it may be, we must not, if we expect perfect and permanent effect, stop short of the point in view, which is an arrest of the existing condition.—Omental inflammation, or omental congestion accompanies dysenteric fever not unfrequently. The indications of its existence are obscure; and its foundations, where they do exist, are not moved without difficulty—not without the most extreme measures in bleeding, blistering, &c.

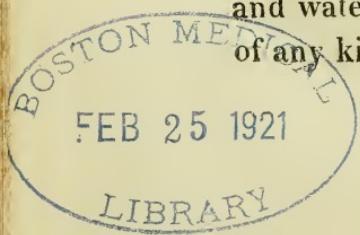
CHAP.

I.

When the condition of the disease has been changed by bathing and bleeding in the manner contemplated, the patient is to be removed from the bath, wiped dry; and, after he is perfectly dry, rubbed with warm olive oil, the entire of the abdomen covered with a blister, a flannel bandage applied over the blister, and James' powder given internally in repeated doses, with occasional additions of acetated water of ammonia in the view of exciting and maintaining a regular and equal diaphoresis on the skin. If the pains and uneasinesses return after a lapse of ten or twelve hours, or if the stools be still small, frequent and without feculence, the vein is to be re-opened, and, whatever may be the apparent weakness of the patient, blood is to be allowed to flow until the end in view be perfectly attained. There is here no safety in half measures. Where the state is inflammation, and the termination suppuration, congestion or gangrene, the physician must not hesitate in striking a balance between the chances of debility and the almost certainty of death.—

CHAP. Where the more direct and imminent danger has  
I.  
been removed by the means stated, the powder of charcoal with a few grains of rhubarb and ipecacuanha, repeated at intervals of five or six hours, maintains its power in rectifying the vitiated secretions of the interior surface : it is of no value where the action of the disease is chiefly upon the exterior membrane, or in the more remote organs within the abdominal parieties.

If it be suspected that the surface of the alimentary canal is inflamed erysipelatously, (and opinion is formed in the case by the appearance of the tongue and fauces) besides abstraction of blood, warm bathing, &c. camphorated mixture with a certain proportion of white vitriol, given by wine-glassfuls at short intervals, is often useful. It materially conduces to allay the irritability of an inflamed surface, and thus to give the chance of success to other means of cure. A dilute solution of sugar of lead is given with the same intention, and with similar good effect. It is not dangerous ; on the contrary, it is of great benefit. Thirty or forty grains of muriate of ammonia, dissolved in four or five ounces of water, or repeated doses of acetated water of ammonia bear upon the same point as a local application ; they are moreover useful as moving and maintaining more or less of perspiration upon the surface.—Emetics and purgatives, though often prescribed, have no place in the present form of disease.—Milk and water, or rice water is the best drink.—Food of any kind, particularly solid food is positively in-



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terdicted.—Warm fomentations of the extremities, viz. legs and thighs, with flannels wrung out of hot water, diaphoretics, viz. compound powder of ipecacuanha, small and repeated doses of James' powder, or, preferably perhaps, acetated water of ammonia, are among the principal of the internal remedies.

CHAP.  
I.

The conditions now alluded to are two prominent conditions of dysenteric disease in its acute or recent stage. Dysentery is frequent in armies, and it is generally considered as a perplexing malady. It is dangerous in itself; more fatal in fact among the military in the West Indies, either primarily or secondarily, than any other, the concentrated fever, as incident to strangers, excepted. But fatal as it may have been, I think I am warranted to say from experience that if the condition of the case be properly discriminated, the principle of the treatment rightly understood, and the means of remedy applied at an early period with care and in justly measured quantity, the cure may be effected with safety, and with almost calculable certainty in a short time, that is, within eight days.

Remark.

On the contrary, if the disease be permitted to go on from day to day without interruption, the structure of the intestine undergoes changes of various kinds; viz. congestions and thickenings—more general or more local; ulcerations—superficial or deep; sometimes simple; sometimes foul—with protrusion of spongy excrescence:—the seat of the ulcerations and excrescences is generally in the colon or rectum.

CHAP. I.  
Late Stage. If the acute stage of the complicated dysentery be far advanced before it is submitted to medical treatment, though abstraction of blood must still be considered as the remedy of chief dependence, at least as the remedy without which nothing can be done with a fair prospect of benefit, the abstraction cannot be carried to great extent at one time without compromising safety: it may however, even then, be repeated without danger, and it ought in fact to be repeated in moderate quantity, at short intervals, until all that is expected from it be attained. If the abdomen be tense and painful, the hypochondria inflated, the evacuations by stool watery, whether copious or scanty, the purging tincture of aloes and myrrh, so often noticed in this sketch, with the addition of half an ounce or more of rectified oil of turpentine, presents itself as a suitable remedy—capable of giving relief and even of assuring something like permanent benefit. If the stools be offensive—mucoous and bloody, the powder of charcoal, by the mouth or clyster, is almost sovereign: if pains, spasms and gripings be urgent, cob-web allays them more certainly than opium, and it allays them without unpleasant effect.

## CASE I.

Martinique, *October 2nd, 1814*.—M. Conroy, 63rd regiment, aged 25, attacked on the 30th of *September* and admitted into hospital to-day, complaining severely of pain, chiefly in the umbilical region, with frequent, slimy and bloody evacuations by stool—and distressing tenesmus; appetite much impaired; skin warm; tongue white; pulse about 80 strokes in a

minute. Bleed to thirty ounces: R. sulph. mag. an ounce and a quarter. Evening,—griping continues with tenesmus: bled to twenty ounces: R. sulph. mag. six drachms. 3rd,—griping continues; bowels freely opened in the night; skin warm; pulse frequent; tongue white. Bleed to twenty ounces: abdomen fomented: castor oil—an ounce. Evening,—fomentations repeated, 4th,—griping entirely gone; stools still slimy—not bloody; tenesmus less urgent. 5th,—good rest; four evacuations without pain or tenesmus; skin moist; tongue clean; pulse soft. Pulv. ipecacuanha C. gr. viii. three times a day. 6th,—one natural stool in the night: pulv. ipecac. C. continued. 7th,—three natural evacuations since yesterday; appetite improving: medicines continued. 8th,—appetite returned. 9th,—convalescent.

CHAP.  
I.

## CASE II.

Martinique, *July 5th, 1814.*—Corporal Schutz, 3rd battalion 60th, aged 40, full habit, admitted into hospital to-day, had been ill four days, the stools at first frequent, mucous and bloody. Bled to twenty ounces: blister to the abdomen: ca. o. mel gr. vi., opium gr. i. Stools like bloody water; pulse, at the time of admission, 80 strokes in the minute—now 100; nausea; dysury; tenesmus urgent; tongue foul; skin moist and cool; blood drawn from the vein covered with a strong buffy coat. 6th,—symptoms rather increase,—the pains somewhat relieved after a second bleeding: caiomel gr. iii., opium gr.  $\frac{1}{2}$ , every fourth hour: effervescent draughts: emollient clyster: tepid bath. 7th,—mouth affected by mercury. Pulv. rhei. scrup. i.: enema emolliens: balneum tepidum: anodyne draught in the evening. 8th,—castor oil: anodyne injection: pulv. rhei. gr. v., pulv. ipecacuan. comp. gr. x. three times a day: warm bath:—no relief: tenesmus urgent; purging continues. 9th, 10th, 11th,—medicines continued; no relief. 12th,—died. *Dissection of the body*—Liver much enlarged—preternaturally red; duodenum inflamed; cæcum and colon strongly adhering to contiguous parts, the colon to itself at its different turnings;

CHAP. the omentum like a red fleshy-like mass, in some parts twisted round the colon and containing purulent matter in several places:—the lungs on the right side formed strong adhesions to the pleura costalis.

### I. CASE III.

Martinique, *October 16th, 1814*.—Louis Vaudreuil, 3rd battalion 69th, full habit, attacked with symptoms of dysenteric fever on the 12th, and admitted into hospital to-day. The stools were frequent, slimy, bloody; the *tormina* and gripings severe; the tongue foul; the pulse 80 strokes in the minute—full; the blood drawn from the vein covered with a buffy crust in cup form. Bled to the extent of twenty ounces: solution of salts with emetic tartar: calomel gr. vi., opium gr. i. at bed time. 17th,—castor oil, viz. an ounce in the morning: calomel gr. vi., opium gr. i. at bed time: the calomel and opium given every night at bed time until the 20th, when the gums were affected. 23rd,—the pain returned; the pulse frequent, full and strong. Bled to the extent of eighteen ounces: blister to the abdomen. 24th,—blood buffy—the surface in cup form; the pain still severe: bleeding repeated: castor oil in the morning: compound powder of ipecacuanha at bed time. 25th,—an emetic; when the operation was finished, a diaphoretic draught, viz. tincture of opium and antimonial wine. In the subsequent days, castor oil occasionally; compound powder of ipecacuanha with some grains of rhubarb in a cup of infusion of quassia three times a day. 28th,—died in the evening.  
*Dissection*.—The intestines generally of an inflamed appearance; the liver considerably enlarged in size.

### CASE IV.

Barbados, *September 29th, 1814*.—K——n, R. Artillery, attacked with severe pain and griping in the bowels, vomiting and purging—the stools mucus with blood. Bled to the extent of three pounds,—relieved from pain; the purging continues

with a good deal of tenesmus: castor oil: calomel and opium. CHAP.  
30th,—pain relieved; purging continues with tenesmus: calo-  
mel and opium every fourth hour. Noon,—purging incessant  
—every ten minutes; evacuations—blood and mucus; tenes-  
mus distressing: twenty grains of powder of charcoal by the  
mouth; one drachm in two gills of rice water by clyster. Oc-  
tober 1st,—no return of pain or tenesmus; purging diminished:  
the powder of charcoal repeated both by the mouth and clys-  
ter. 3rd,—discharged in perfect health.

I

## CASE V.

Barbados, May 25th, 1815.—A man of the R. Artillery, ad-  
mitted into hospital to-day, complaining of purging—not vio-  
lent and without pain. 26th,—seized in the night with violent  
pain and spasm in the tract of the colon and about the sto-  
mach: bled and bathed,—not much relieved: bled again  
largely—the precise quantity not stated: bathed,—somewhat  
easier; desponds; the pulse very frequent and small; the coun-  
tenance pale; the lips pale; the tongue rough; the skin damp  
—not warm—and not animated. Evening,—not worse; drank  
some porter,—refreshed; skin not warm and animated. 27th,  
—bad night; little or no sleep; pulse small and frequent; un-  
easiness in the bowels,—desire for the night chair; stools small  
and watery,—and give no relief; the tongue rough, foul and  
brown; skin damp—not animated:—rubbed with warm oil and  
mercurial ointment;—a sense of fulness in the bowels; no ten-  
sion; flatulence troublesome: purging tincture of myrrh and  
aloes with æther. Evening,—not worse; an effective evacua-  
tion by stool,—easier, but so weak that he can scarcely turn  
himself, or bear to be turned in bed; the pulse slower, stronger  
and more expanded. 28th,—slept in the night; pulse rather  
more distinct; tongue moist and clean; eye clear; coun-  
tenance more animated; distressed with flatulence and disten-  
tion. 29th,—no sleep; abdomen distended—uneasy—distres-  
sed; no effective evacuation by stool,—the stools watery and  
small: tongue rough and brown; no vomiting; urinary dis-

CHAP. I. charge suppressed : injection not admitted. Evening,—died in the course of the day. *Opened*.—The omentum thickened,—resembling a fleshy swathe embracing and girding the whole of the intestines, adhering firmly to the colon and descending into the *pelvis* and attaching itself to the rectum. The colon was diseased through its whole extent,—gangrened in many parts,—ulcerated internally in some,—the interior coats putrid; the mesocolon in a similar state with the omentum.

*Note*.—The above was a case of great violence, and the means employed in cure were only of moderate force. Bleeding to the most extreme measure at once, and repeated at short intervals, warm bathing long continued, and blisters to the whole of the abdomen, with James' powder, nitre, camphire and acetated water of ammonia in quantity might, perhaps, have done something ; what was done did nothing.

3. The simpler form of dysentery, the action of which is manifested in the function of the mucous membrane, though an acute disease, is not one of those diseases which proves rapidly fatal, or which often terminates fatally in the primary stage. It ordinarily abates or ceases within a fortnight or three weeks from the commencement, either through the aids of art, or of its own accord. But though it cease, as here stated, it very often soon returns, either by obvious transgression of the rules prescribed for diet and regimen, or through secret periodic influences, the operation of which we do not understand and the effect of which we cannot perfectly controul. The disease, thus ceasing and recurring at intervals, engenders certain changes in the structure of the coats of the intestinal canal during recurrence, in consequence of which the intestine is rendered less fit for the performance of its office. As the changes effected on structure by these succes-

sive recurrences are various in their form and nature, so the symptoms which indicate their existence furnish a considerably diversified picture of disease. Among others, the fat is absorbed from the cellular membrane, the flesh wastes, the pulse is more frequent than natural, generally small, confined, somewhat hard and unexpansive ; the tongue is sometimes rough and foul—dry or moist as may be ; sometimes it is clean, red, smooth, glossy, and shining as if it were covered with a coat of varnish ; sometimes it is preternaturally red in its substance, superficially rough and besmeared with a black pigment or adventitious pellicle—sometimes moist—often dry. The evacuations by stool are various, sometimes watery and copious, sometimes watery and small ; they are sometimes rendered with pain and griping—sometimes without pain ; and they sometimes, whilst numerous and copious, resemble dirty water with dark coloured flakes interspersed, but with little real feculence :—this is more usually observed in very late stages, where inflammatory action supervenes in subjects that are exhausted and cachectic. In other cases, the evacuations are mucous and bloody, more or less plentiful ; sometimes they are mixed with purulence, sometimes with sanies or offensive ichor ; sometimes they are smooth, greasy—more or less lienteric.—The number of stools in a given time is rarely high, sometimes not more than three or four in twenty-four hours, rarely more than seven or eight. Sensations of irksomeness are felt in all parts of the alimentary canal, but

CHAP. I. particularly in the tract of the colon and rectum.  
Tenesmus is rarely urgent comparatively with what it is in the recent form of the disease ; but there is often uneasiness about the fundament and more or less of trouble and difficulty in the urinary secretion. The body wastes daily, the skin becomes parched and inelastic—without activity of life and circulation ; the heat is often higher than natural.

Complicated Form.

The complicated form of acute dysentery is more rapidly fatal than the simple ; but, while more rapidly fatal in its course, it is comparatively less liable to recur after it has ceased; consequently it furnishes few examples of the disease in its chronic state. Where the course of this form has been protracted, congestion, or abscess in the intestine itself or other part nearly connected with it, is usually observed in dissection of the dead body ; but it is difficult to ascertain the precise condition in the living subject, or to form a distinct prognostic of the issue ;—the best cures are only imperfect.

Secondary Form.

Besides dysentery, originally and purely intestinal, the gastric remittent, and even the intermittent often assumes the dysenteric form in relapse : by this contingency, the dysenteric column, in the returns of military hospitals, is apparently augmented beyond the real fact. The dysenteric disease arising from this source, viz. action transferred, generally moves by periods, especially at its early stage. The stools are then copious and watery, sometimes bilious, acrid and corrupted, in correspondence with the other vi-

tiated excretions of the organs of the abdominal cavity. CHAP.  
I.

*Dissection.*

Where the dysenteric form of disease proves fatal in what is termed the chronic state, the more direct causes of death discover themselves in various forms of changed structure, either in the coats of the intestinal canal itself, or in the structure of the parts which are nearly connected with it. In some, an erythematous redness is often conspicuous in the interior surface through the whole extent of the canal, more remarkable in some places than in others, but without perceptible marks of actual ulceration. In others, the interior surface is spongy and loose, inflamed in various places, and deeply ulcerated in some, the cavity of the intestine more or less filled with ill-conditioned purulence or offensive bloody mucus. In many, the coats of the intestines, particularly of the lower intestines, are thickened and changed in structure; they are contracted at one place, dilated at another, sometimes converted generally or partially into a leather-like tube of preternatural density and without vascularity; sometimes adhesions are formed between contiguous parts, constituting masses of congestion which nearly obliterate the traces of the natural structure. The interior surface is moreover sometimes bespangled with spongy, foul ulceration of various size and condition—sometimes deep and corroded, sometimes foul and protuberant like mulberry. The mesentery

CHAP. I. often presents a mass of unnatural congestion ; the veins are distended with black blood, the glands red —large as peas, sometimes as kidney beans, even as pigeon eggs and filled with cheese-like matter. The omentum is often of a dirty red colour ; sometimes it is in a manner obliterated—absorbed by a peculiar process of animal life under the long continuance of the disease. The liver, spleen and pancreas, particularly in such forms as supervene upon fever, whether gastric or intermittent, are rarely sound. The liver is then almost always of changed structure—generally obstructed and of increased size.

### CURE.

The treatment for the cure of dysentery, where the disease has degenerated into chronic form depending upon changed structure in the coats of the intestinal canal and parts connected with it, implies a complicated process of difficult execution and ordinarily of a result little satisfactory. The means which have been employed by different practitioners are numberless. I cannot recount them all ; and, not to weary the reader, I shall confine myself to the notice of those only, the effects of which have been proved within my own experience.

Erysipela-  
tous.

1. In that form of chronic dysentery, where the tongue is red, dry, smooth, glossy, and shining, camphorated mixture with a few grains of white vitriol, given four or five times during the day and alternated with acetated water of ammonia in large doses

appears, in reasoning on the nature of things, to promise benefit, and I think I am warranted to say that it does not fail in experience, where it is administered carefully and with a proper attention to succession in the use of other means. Solution of sugar of lead, viz. ten grains of sugar of lead, one drachm of chrystals of tartar, dissolved in two pints of boiling water, given every three or four hours to the quantity of two ounces for a dose, gives evident relief on many occasions,—and in no instance, within my knowledge, has any inconvenience arisen from the supposed deleterious effects of the lead.—These remedies are beneficial, but they are only partial in their operation; the radical means of cure must necessarily be of such a nature as to act upon the whole of the system, for the whole of the system is more or less implicated in the case. Of general remedies, immersion in a warm bath of moderate temperature is one of the first, and one of the most important. The virtues of the bath are improved by the addition of aromatic herbs, or *eau de Cologne*; the effect of its operation is confirmed by continuing the immersion for one hour at least. After the bath, friction of the body with warm olive oil; and, after friction, covering the abdomen with a piece of flannel and swathing it by a flannel bandage, are means of some value, particularly as assisted by small doses of James' powder, flowers of sulphur and tincture of opium, morning and evening. Milk, custard, *blanc manger*, jelly of rice, or arrow-root form the principal part of the diet; animal food is peremptorily interdicted.

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I.

Ulcerative.

2. In another form of the disease, viz. where the appearance of the stools gives reason to believe that there are numerous superficial ulcerations in the interior surface of the lower intestines, but without such congestion in the structure of the coats as constitutes permanent change in the organization, powder of charcoal, given by the mouth, particularly with the addition of rhubarb and ipecacuanha, and given by elyster in rice or barley water, is a remedy of important value. Purging tincture of aloes and myrrh is one of the best forms of purgative. Burnt alum, viz. fifteen grains, with a like quantity of gum arabic, made into a bolus and given at intervals of five or six hours, has also, in my own experience, often operated favourable changes in this condition of disease. If there be grounds to believe that there are ulcerations in the rectum and in the lower part of the colon, the tincture of aloes and myrrh, a solution of blue vitriol, even a solution of corrosive sublimate in lime water may be injected with advantage. The warm bath is to be employed with the same general view as in the former case: partial ablution, or partial immersion in cold water is occasionally of benefit; frictions and flannel bandages are useful;—diet of a low scale and of the simplest quality is indispensable.

Congestive.

3. In other cases, viz. where there is reason to believe that the structure of the coats of the intestine is changed, the coats thickened, the interior surface broken by foul and spongy ulceration, the mesenteric system loaded with congestion, the line of

proceeding is perplexed, the indications of cure complicated and frequently ambiguous. But perplexed as it may be, I should not hesitate in the case described, however much the patient may be reduced in flesh, to direct that blood be abstracted in small quantity, viz. twelve or fourteen ounces, that the abstraction be immediately followed by immersion in a warm bath of moderate temperature for the space of one hour or more, that friction with warm olive oil be made to the whole of the body, and that flannel bandages be applied to the trunk, in such manner as to make a slight degree of pressure upon the parts contained within the abdominal parietes. These, with suitable preparations of mercury, singly or combined with opium and James' powder, constitute the principal means of cure. The baths and frictions are to be repeated daily, the bleeding occasionally—once a week or oftener; the mercury to be given in small doses, with opium or James' powder, or a few grains of flowers of sulphur until the salivary glands be in a slight degree affected by it. The diet is to consist of milk, whey, rice or barley water, the expressed juice of alkalescent or deobstruent herbs, viz. dandelion, trefoil, succory, endive, scurvy grass, &c. Gross animal food is entirely interdicted; the lighter of the farinaceous is admitted—and that only in small quantity. When the foundations of the congestion have been moved by a persevering continuance in the means alluded to, the arsenical solution, myrrh, steel and soda alternated with other things that are suitable

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CHAP. I. to the circumstances at the time, aid materially in forwarding the cure; that is, they confirm the advantages that have been gained by a succession of expedients.—If there be evidence of the existence of foul ulceration, spongy and diseased surfaces in the lower part of the canal, the injection of soap and water—warm and in large quantity for the purpose of washing away foulnesses, followed by injections not exceeding two or three ounces in quantity of solution of white vitriol and alum, blue vitriol, corrosive sublimate, &c. afford relief in many cases, even contribute materially to effect a permanent cure. A dilute solution of the nitrate of silver might, I believe, be employed for the same purpose with a reasonable prospect of advantage; but I have not seen it so employed. Where heat, pain, and active inflammation predominate, solution of sugar of lead is the most suitable injection. Where the ulcerated surfaces are healed or in a healing state, the foundations of congestion shaken or removed, and where purging continues from relaxation or preternatural irritability, a variety of tonics and astringents have been employed by practitioners for its repression, and, if employed with discrimination of circumstances, they are often employed with benefit. Of these gum kino, catechu and sima-rouba have appeared, in so far as my experience goes, to be the most useful. They are valuable in their places; but it is to be here remembered that the effect of all substances of this class, which is often considerable for a few days at the first trial,

is soon lost ; hence it becomes necessary, in order to maintain the ground that may have been gained by the first impression, to vary the form of tonic at short intervals, so as to keep the function of the alimentary canal in a state of artificial activity in the hope it may in time resume its healthy habit.—It is to this condition of disease that the arsenical solution particularly applies ; and it is here a remedy of the greatest value.

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The progress of the chronic form of dysentery may be suspended temporarily, and perhaps cured permanently, even at a late stage, by a well adjusted perseverance in the measures here recommended. But, in order to assure success to this difficult undertaking, the adjustment of diet and regimen, while scientifically laid, must be rigidly executed ; the air and climate, if dysentery be endemic in the district where the subject resides, changed, either by a cruise at sea, or by removal to a cantonment on shore where the disease is little known. Change of air and climate presents itself, in theory, as a point of great importance to the success of the undertaking : I am enabled from experience to speak with confidence of its value in practice.

Change of  
Air.

Dysenteric convalescents were sent from the hospitals at Barbados to cruise at sea wherever opportunity offered, between the years 1812 and 1815 ; and, though they were never sent with those comforts and equipments which the condition of invalid men required, yet a majority of them returned with improved, and some of them with re-established health. The cruise at sea, both from rea-

CHAP. I. soning on the subject and from evidence in trial, furnishes the most desirable change of climate for the dysenteric invalid; but, in defect of suitable accommodation on board of ship, relief is to be sought from what presents on shore, and if pains be taken to enquire, the trouble will often be rewarded. The small town of La Trinité, on the north side of the island of Martinique, is reported by its inhabitants to be in a manner exempted from diseases of dysenteric form. The report was current; and as it implied information which, if founded in truth, might be important to the interests of the British army, it was thought proper to investigate the grounds of it in the year 1812. The fact was ascertained by credible testimony to be such as it was vulgarly stated to be; and, upon the faith of that testimony, a proposition was submitted to the Commander of the Forces, requesting leave to make experiment with some of the dysenteric patients then in the hospitals at Barbados. The Commander of the Forces acquiesced in the proposition, and fourteen persons were in consequence selected for trial. The persons selected, it is proper to observe, were not absolutely condemned as hopeless of recovery. One only was thought to be in immediate danger; but they had all been liable to relapse after relapse for a length of time, and few, if any of them, gave promise of permanent re-establishment if they were allowed to remain where they were. They were accordingly embarked, sent to La Trinité, placed under careful medical super-

intendance ; and they were all, except one, restored to efficient health in the course of two or three months—in fact so far restored that they reassumed their military duties when they returned to the garrison at Barbados. The example adduced was decisive in proof of the benefit's of the air of La Trinité ; and, in prospect of further good effect, a house was hired and fitted up as a depot hospital for dysenteric convalescents from the different islands in the command. The depot was established in May or June, 1813 : a hurricane occurred in July which deranged the accommodations, diminished the comforts, or operated other changes on the conditions of the atmosphere, whereby the subsequent benefit, though still considerable, was much less decisive than it appeared to have been in the first trial.

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I.

The cure of the chronic form of dysentery is, as already observed, a difficult undertaking ; and, according to the usual mode of proceeding in military hospitals, almost a hopeless one. Without possessing the means of assuring changes of air and climate as occasions may require, and of instituting and giving effect to plans of diet and regimen that are suitable in all points to the condition of the subject, the medical officer cannot expect to do much by all the other aids of his art. The arrangement of diet is essential to the success of cure ; but it does not appear to be well understood in principle, and every day's experience brings proof of error in practice. The dysenteric subject is for the most

CHAP.  
I. part reduced in flesh and exhausted in strength.  
~~~~~ He, for the most part, concludes that these can only be recruited by nourishing diet and certain allowances of wine or other strong liquor. The medical officer subscribes to the opinion, either yielding to importunity or not estimating justly the true causes of things. He is thus often led to prescribe a form of diet that is termed generous, with large allowance of wine and other comforts, where there are grounds to believe that the intestinal canal is ulcerated, its coats thickened, the mesenteric system obstructed, and other of the abdominal organs contingently diseased. If the bodies of the dysenteric be examined after death, and if it be permitted to reason on what is seen, nothing could be devised less suitable for the ulcerated and inflamed intestine, the obstructed and inflamed mesentery than rich diets and strong wines; yet such, through prejudice and precedent, appear very generally in the diet tables of the dysenteric in British military hospitals.—The injuries of such proceeding are not unimportant: they have been greatly destructive, and they call for reform. It is dangerous to attempt to rectify medical error by mandate; but it is to be hoped that the evidences of the dissections, which medical officers are enjoined to make of those who die under their care, will, in time, induce them to consider the subject scientifically and on its own grounds. If they do so, it is scarcely possible that a system, which is incongruous in reason and which can bring no support from

experience of good effect in practice, will long continue to prevail.—The limits of this sketch do not admit of detail, and I content myself with suggesting a general view on the manner of proceeding. The outline given appears to myself to be reasonable,—I should hope that it would be effectual if it were correctly administered. I must however add that it has never been completely executed under my own eye, the immediate treatment of sick (and in this case the physician's own eye must descend to the minutest attentions) not being consistent with my official situation in the army; or, where it was so, the means that would have given success to the view not being within command at the time.

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I.

CASE I.

Martinique, *October 11th, 1813*.—Johnson, 63rd regiment, aged 25, has been seven years in a tropical climate, admitted into the hospital at St. Pierre to-day, but had been in hospital at another station for the space of six weeks under a disease of dysenteric form. The stools at the time of admission were feculent and less frequent than they had been; the pulse was 98—weak; the tongue red and shining; debility great,—emaciation extreme. Calomel gr. ii., ipecacu. gr. ii., opii. gr. i.—*ex infuso Quassiae ter in die*. *November 5th*,—pulv. ipecacuan. comp. gr. x.: p. rhei. gr. v.—*ex infuso Quassiae ter in die*. *16th*,—solut. vitriol: semunc. ter in die: small doses of mild purgatives—anodynes occasionally. The number of the stools decreased gradually—and they were at last reduced to three in twenty-four hours; the pulse still frequent and weak: the tongue very red and shining with no amendment in the appearance; no increase of strength; flatus and distention sometimes distressing. *December 7th*,—four stools—scanty, dark coloured; much flatu-

CHAP. I. lence; pulse 90; tongue red and shining. 8th,—stools frequent and bloody, with griping pain; tongue red—foul on some parts; pulse weak,—100 strokes in the minute: emetic; after the operation of the emetic, effervescing draughts with two drachms of tincture of colombo every third hour. 25th,—stools frequent; pulse 114, and weak; tongue red: calomel gr. iii., opii. gr. $\frac{1}{2}$, every fourth hour; effervescing draughts occasionally. 29th,—four stools in twenty-four hours: the appearance less unnatural; the mouth slightly affected by mercury: pulv. ipec. c. gr. x., rhei. gr. v. ter in die: calomel gr. ii., opii. gr. i. at bed time.—This was omitted after a few days, and the other means were varied according to urgency of symptoms. He continued upon the whole easy, with occasional gripings and liquid stools,—sometimes with nausea and even bilious vomiting. He gradually lost strength and flesh, and died on the 27th of February, 1814. *Dissection.*—Liver enlarged; its substance of a pale diseased appearance; the blood vessels of a florid red—numerous on the surface and in some parts of the interior substance, particularly in the left lobe; the gall bladder full of dark coloured bile; spleen small in size; small intestines overflowing with bilious matter—preternaturally red both externally and internally,—some parts of a darker colour as tending to gangrene.

CASE II.

Martinique, November 16th, 1813.—John Ditchborne, R. W. I. Rangers, aged 30, admitted into hospital to-day, complaining of purging, the stools slimy, bloody and frequent—with griping and tenesmus; the tongue furred; the appetite impaired; the skin dry; the pulse quick.—Bled largely—and purged with sulphate of magnesia, and afterwards with castor oil. The warm bath was ordered; fomentations were applied to the extremities; blisters to the abdomen; nauseating doses of tartarized antimony were given occasionally,—likewise ipecacuanha and now and then a laxative. This plan of treatment not succeeding, small doses of calomel with opium were substituted in its place, but with no better success: the tenesmus

was very urgent; clisters with laudanum gave very little relief: the nights were sleepless; emaciation extreme: he lost ground daily, and died on the 15th of *February, 1814*. *Dissection of the body*.—The left lung appeared diseased; tubercles in various places; the liver was of an unnatural pale colour; the spleen of a large size; the intestines adhered externally at various points to each other; the mesentery much inflamed throughout.

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CASE III.

Martinique, *November 19th, 1813*.—Charles Godfrey, aged 22, of a spare habit, attacked with symptoms of dysentery on the 18th of *November*, and admitted into hospital to-day. The stools frequent—with griping pains; the skin dry and scaly; the abdomen inflated and tense. Sulphate of magnesia, followed by repeated doses of compound powder of ipecacuanha:—he appeared to be relieved. 27th,—the symptoms recurred: calomel gr. $\frac{1}{2}$, opium gr. $\frac{1}{2}$, three times a day. December 9th,—the calomel and opium were continued—and the mouth was slightly affected. The swelling or tension of the abdomen subsided; the dysenteric symptoms increased; the flesh wasted; and death closed the scene on the 27th of *December*. *Dissection of the body*.—The liver much enlarged and hardened; the coats of the stomach much thickened; the stomach itself contracted, but containing a quantity of viscid, tenacious matter of a dark, dirty, grumous appearance; the duodenum also much thickened; the villous coat a good deal inflamed, and matter of the same nature as that observed on the inside of the stomach adhering to it closely. The great arch of the colon was greatly distended, its inner surface very vascular, superficial ulceration, or rather abrasion of the villous coat. The whole of the intestinal tube was thickened, and of an unusual brawn-like hardness—resisting pressure: the lower part of the canal contained a slimy and bilious matter in considerable quantity, but no hardened fœces. The spleen was somewhat increased in size, but had nothing in its appearance deserving

CHAP. notice. A small quantity of water—not more than three pints
I. or a quart, floated on the surface of the intestines.

CASE IV.

Barbados, *November 9th, 1814.*—Withers, R. Artillery, suffered from disease in dysenteric form for these last six months. The disease, being of the milder kind at the commencement, was not treated in the prompt and decided manner that was customary in the hospital of the Artillery corps. Withers did not appear to have been bled, at least bled to any extent: the cure was trusted to calomel and opium, with occasional purgatives and compound powder of ipecacuanha. The disease continued notwithstanding to advance; the flesh wasted; and four months ago there seemed to be no hopes of recovery. The arsenical solution was prescribed for him: he took five or six drops of it twice a day for some time; warm baths at least three times a week; the diet chiefly consisted of arrow root and milk, rice or custard. The progress of the disease was arrested; the number of the stools diminished to two, or at most three, in twenty-four hours; the sleep was sound; the appetite good; flesh was reproduced; and strength was regained to a certain point, but recovery stopped short of perfect health. He walked out in the mornings and evenings; and, though he was still invalid, there were hopes that he might have remained valetudinary until an opportunity offered of giving him the chances of recovering health by a change of climate. This did not soon occur: he ceased to make progress, began to retrograde, lost strength so that he could not take exercise, and, for three weeks before he died, he could not rise from bed, being emaciated to the last degree of emaciation. He died on the 9th of November. *Opened.*—The mesenteric system was exceedingly diseased,—the glands obstructed; the omentum was very vascular, and had the appearance of having been materially affected in the early part of the disease; the small intestines were livid generally as if circulation had been very languid for a length of time:—the whole of the organs in the abdominal cavity gave evident indications of constitutional derangement.

CASE V.

CHAP.
I.

Barbados, May 30th, 1813.—C——n, R. Y. Rangers, long ill of disease in dysenteric form, complicated with disease of the lungs; the whole having degenerated into a constitutional cachexy, died this evening and was *opened*. The colon contracted in some places, dilated in others—diseased through all its extent;—several excrescences protruded outwards from the interior; the mesenteric glands inflamed and enlarged; the lungs adhered to the pleura, the substance black and spongy like a fungus; no open abscess.

D. *Dysenteric Fever—Retrograde or Liquescent.*

To the above short and imperfect view of the dysenteric form of fever, considered as a disease in progression to the formation of new parts, I shall add a remark on a form which may be properly termed retrograde or liquefient. The retrograde form occurs sometimes as original, arising under certain malignant constitutions of season from the operation of unknown epidemic causes. It frequently occurs in relapse under the operation of known artificial causes, which corrupt, or in an inexplicable manner deprive the air of the principle which is necessary to the support of life. It sometimes appears in the West-Indies epidemically; but I have myself seen it only sporadically and contingently in that country. It begins, where it does occur, as dysenteric fevers usually begin, viz. with more or less of chilliness. The invasion is often sudden, the course rapidly fatal. The stools are sometimes watery and thin, generally bloody, dark and fetid; sometimes they

CHAP. I. consist of blood unmixed—dark and grumous ; sometimes pale and dirty, like water in which half putrid meat has been washed ; sometimes they are copious and fetid—slimy and bloody ; sometimes copious and colliquative without appearance of blood.

The above symptoms are observed in the primary or original form : they are very common in the secondary or relapse under a corrupted atmosphere, whether the original fever may have been endemic, epidemic, or personally contagious. In the different forms of this disease, from whatever cause originating, the skin is oftener preternaturally cold than preternaturally hot ; the countenance is often dark and cloudy as in sea scurvy ; the eye is clear, pearly white, or glossy—the expression vacant or desponding ; the tongue is sometimes smooth, red, large, or swollen, sometimes livid or leaden coloured—generally moist, and sometimes preternaturally flaccid ; the pulse is irregular ; sometimes it is depressed or sunk ; sometimes it is small, frequent and obscure ; it is often weak, and always inelastic.

Dissection.

The appearances which present themselves on the dissection of the dead body, whether the disease be primary, or secondary as a form of relapse from general fever, are ordinarily much alike. Black grumous blood is often effused into the intestinal cavity, most commonly into the cavity of the small intestines so as to give to the intestine the appear-

rance of black pudding; the coats of the intestine in such cases are rarely diseased. Instead of the black grumous blood alluded to, there is sometimes fetid fluid resembling water in which putrid butcher's meat has been washed, sometimes bloody mucus. In this last case, the interior coats are spongy, loose and separated—even ulcerated. Sometimes the peritoneal coat is black and gangrened throughout, particularly in cases of relapse from general fever under an impure state of atmosphere—a condition more resembling stagnation as a first effect than as a consequence of preceding excited action. The liver and spleen are often so distended with black blood as to resemble a mass of putrid gore.

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I.

CURE.

The dangers of this form of disease are great, whether the disease be primary or secondary, that is, original, or relapse in dysenteric form from preceding general fever. Immersion in a warm bath of a high temperature presents itself first among the remedies. The virtues of the bath, as intended by its heat to stimulate the surface and to equalize the circulation of the blood, will be materially augmented by the addition of ammonia, or *eau de Cologne*. Where the surface has been warmed and the circulation somewhat excited by the influence of the bath, abstraction of blood from a vein in the arm while the body is under immersion, whatever abhorrence there may be to the practice, has appeared

CHAP. I. to myself to be a measure of importance, not as curing the disease directly, but as effecting changes in the distribution of the blood, and perhaps on its constitution, which facilitate and render effectual the action of other remedies that are prescribed with a view to direct cure. The blood is to be abstracted, as now observed, while the body is under immersion; and, while the stream flows, a warm and stimulating cordial, viz. wine, æther, or warm brandy and water, is to be given internally in such quantity as circumstances may indicate to be safe and proper. The quantity of blood to be abstracted on this occasion cannot be defined by prescription. It can in fact only be safely and usefully judged by circumstances as they arise under the act of abstraction; and it ought to be judged in all cases under the eye of the physician himself, for it may be said with truth that the life of the patient is compromised if the measure be defined by prescription, or if it be left to be regulated by the judgment of an ordinary operator.—The purging tincture of myrrh and aloes, with or without oil of turpentine as the case may be, proves, on most occasions, the best form of purgative. Burnt alum to the quantity of fifteen grains, with an equal quantity of gum arabic made into a bolus and repeated at an interval of five or six hours, has sometimes been given with advantage under my own eye, particularly where the evacuations were copious, mucous and bloody. Frictions of the skin with warm and stimulating oils, warm air externally, diffusible stimulants internally, &c. hold out a pro-

mise of benefit; but I cannot from experience define the degree, not having had the opportunity, where a disease of the form in question occurred, of executing my views according to my wishes. Powder of charcoal, given by the mouth or by clyster, presents itself on this occasion as a remedy of great promise. I have no direct experience of its effect, no case of this form of disease having occurred since I had knowledge of charcoal as a remedy for dysentery.

CHAP.
I.

SECTION IV.

Hepatic Forms of Febrile Action.

The cause of endemic fever sometimes manifests its action prominently on the hepatic system in the West-Indies, as well as in other countries; but I have nothing of consequence to add to its history or cure beyond what is known to every one. The cause acts locally, and it manifests its action under different forms. I distinguish four that are prominent, sometimes more pure and simple, sometimes more mixed and complicated, viz. 1. A mode of action, more peculiar to the sanguine temperament, manifesting increased circulation in the sanguiferous system and terminating in suppuration according to a common rule of proceeding. 2. A form of congestion and growth of new parts, more peculiar to the lymphous temperament, terminating in various forms of changed organic structure, usually termed

CHAP. I. obstruction. 3. A form of diseased secretion, chiefly manifested in the biliary system. And, 4. a form of slow or impeded circulation, more peculiar to the gangrenous temperament, terminating in stagnation or engorgement throughout the whole extent of the liver.

Dissection.

The appearances, observed in dissection of the dead body, vary according to the form and character which the morbid action had assumed in the progress of the disease. In the sanguine temperament, where the vascular action is high, the natural tendency of the act is suppurative; hence part, or the whole interior of the liver is converted into purulence. Adhesions are formed occasionally between the external coats of the liver and contiguous parts: the substance is corroded, and the matter finds issue, sometimes through the lungs, sometimes through the intestinal canal; and sometimes the tumour, in consequence of adhesion with the parietes of the abdominal cavity, presents itself externally and prominently so as to admit of being opened by the knife. In the phlegmatic or lymphous temperament, the vascular action is increased only in an obscure manner: congestions, adhesions, and accretions which constitute new forms of structure of various kinds and degrees, are the obvious effect. The liver, in such case, is usually enlarged in size, the substance sometimes pale, sometimes brown like the colour of brick—firm and in a manner friable, sometimes dry and

rough like coarse freestone, sometimes dry, without moisture as if it had been boiled ; the exterior is sometimes smooth, sometimes studded with knobs of peculiar structure. In the serous temperament, there is more or less of change in the organs of direct biliary secretion. In the gangrenous temperament, the substance of the liver is often enlarged, the interior distended with black blood more or less fluid ; sometimes it is in a manner rotten—the coats ruptured by distention.

CHAP.
I.

CURE.

1. The first form of the hepatic fever happens contingently in all countries ; it is more common in the West Indies than in most countries in Europe. The means of cure are obvious, viz. abstraction of blood to great extent, blisters to the side, cooling laxatives, and such other means of remedy as moderate the general circulation and divert from the liver to the surface of the body, or the excretory surface of the alimentary canal.

2. The second form of the disease is not unfrequent in the West-Indies in particular districts, especially in those most liable to intermittent fevers. In regard to cure, after abstraction of blood to such extent as increases the susceptibility of the system generally, mercury administered in small doses, given in such manner as to excite the action of the salivary glands, and continued for a sufficient length of time to effect and assure a permanent change in

CHAP. I. the diseased actions of the organ, is the remedy of principal dependence.

3. Mercury, after the condition has been prepared for its action, is the principal means of cure where the biliary secretion is principally in fault.

4. The third form occurs principally under the existence of the gangrenous constitution, and not unfrequently under the predominance of malignant epidemics. The means of cure consist principally in abstracting blood from the veins while the body is under immersion in the warm bath; in gestation in the open air in wheel carriages after the foundations of the disease have been moved by bleeding and bathing; in purgatives of brisk operation that act extensively and stimulate the action of the hepatic system; together with other means which move the tide of circulation towards the surface of the body, and which maintain it in force in the extremities.

CASE I.

Martinique, *July 10th, 1814*.—Augustus Knopp, 3rd battalion 60th regiment, aged 27, florid complexion, scrophulous habit, attacked on the *9th July* and admitted to-day, complaining of pain of the right hypochondrium—much increased by pressure on the part; cough troublesome; respiration difficult; the pulse 82 strokes in the minute—and full; the tongue foul; the skin hot. Bled, at the time of admission, to the extent of twenty ounces: calomel gr. vi. *11th*,—bled again to the extent of twenty ounces: calomel repeated, followed by solution of purging salts and emetic tartar:—the solution operated freely: blister applied to the side: James' powder gr. x. *12th*,—calomel gr. iii., opium gr. $\frac{1}{2}$, every fourth hour. *14th*,—calomel

gr. ii., opium gr. i. twice a day. 16th.—the mouth affected by CHAP.
mercury : calomel omitted : nitric acid. 17th,—convalescent. I.
Recovered.

CASE II.

February 21st, 1814.—John Oliver, aged 44, of a full and robust habit, attacked on the 18th, and admitted into hospital to-day. He complains of fever, which has commenced with rigor, about 9 o'clock in the morning, every day since the 18th. It subsides after a few hours by partial perspiration. The right hypochondrium is tense and painful to the touch, particularly to pressure; the pulse 100 strokes in a minute; the tongue foul; the skin moist, or damp; the body costive; the blood drawn from the vein covered with a buffy crust and turned up at the edges. Bleed to the extent of thirty ounces:—pain relieved: calomel gr vi. every four hours: blister to the side: solution of salts given at intervals until plentiful evacuations by stool be obtained. 22nd,—the pain returned in the evening: bled to sixteen ounces: emollient clyster: fomentations to the side: calomel gr. vi., opium gr. i. at bed time. 23rd,—calomel gr. iii., opium gr. $\frac{1}{2}$, every fourth hour: another blister to the side:—exacerbation of fever commencing with rigor in the morning; anxiety; pain in the side distressing; skin cold; pulse very quick—weak. 24th,—died in the night. *Dissection of the body*—Liver much enlarged in size, containing a large quantity of matter in its interior; the spleen enlarged in size, but not suppurated.

CASE III.

Guadalupe, September 10th, 1814.—William Alls, of a plethoric habit, attacked in the evening with head-ache, thirst, pain in the right hypochondrium—increased by pressure, cough—difficulty and pain in breathing; pulse 120 strokes in the minute; skin warm and dry; tongue foul—covered with a yellow fur; body costive. 11th,—admitted into hospital about noon: bled to the extent of forty-eight ounces,—blood buffy:

CHAP. pulv. antim. jacob. gr. viii., calomel gr. xii.: warm bath; and,
I. at the distance of an hour, a solution of purging salts. Evening,—bled to the extent of thirty-two ounces: blister to the side: calomel and James' powder repeated. 12th,—pain continues—increased by deep inspiration and by pressure; pulse frequent and quick;—one bilious evacuation in the night. Bled to the extent of thirty-two ounces: tepid bath; calomel and James' powder repeated. 13th,—three bilious evacuations—of a green colour, during the night,—one in the morning; the pulse 100 strokes in the minute—comparatively soft; the tongue still foul; the skin cool and moist; the pain of the side gone: calomel and James' powder continued: the calomel increased to twenty grains twice a day. 14th,—the mouth slightly affected by mercury: calomel omitted. 16th,—no complaint. 21st,—discharged.

CHAPTER II.

*Forms of Febrile Action, as manifested in the
Organs of the Middle or Thoracic Cavity.*

SECTION I.

*Pneumonic Forms of Febrile Action—the
Course Progressive.*

THE pneumonic is an important, and, in some countries, a frequent form of the action of a febrile cause. It is more common, according to the laws of the annual revolution, in some seasons of the year than in others; and it is sometimes epidemic in seasons and places to which it does not seem to belong. It is not uncommon among European soldiers in the islands of the West-Indies; it is the most common and the most dangerous form of disease that occurs among the transplanted natives of Africa, whether such as are enrolled in the lists of CHAP.
II.
Locality.

CHAP. II. the army, or such as are reserved for field labour ; particularly in islands of a dry air and broken surface.—Pneumonic fever presents itself under a great variety of form ; I comprehend, in this limited sketch, two or three of the more prominent only.

Suppurative. A. Pneumonic fever occurs frequently under the predominance of what may be termed the sanguine base of temperament. It then ordinarily begins with a sense of cold and chilliness, sometimes with a considerable degree of rigor accompanied with severe aching of the back, limbs and joints, pain of the head, thirst,—nausea and even vomiting. Respiration is hurried and difficult, sometimes impeded by pain diffused through the whole of the thoracic cavity, sometimes by pain at a particular point only ; the breath is hot ; the lips are generally dry ; the tongue is foul—sometimes dry, sometimes moist ; the eye is full—sometimes prominent or protruded, hot, painful and red. The countenance is flushed, even to crimson—more or less agitated and confused ; the urine is red and scanty ; the body is costive ; the skin is ordinarily hot, sometimes very hot and dry ; the pulse is frequent and hard, sometimes full and strong, sometimes irregular and intermitting. Cough is more or less troublesome—dry and teasing.

The tumults, so common at the invasion, generally subside in ten or twelve hours. There is even sometimes a certain degree of remission. The distress however soon recurs with violence ; and the morbid act, formed on this base, proceeds in its

course with temporary periodic abatement and aggravation—most commonly to the seventh day, when signs of crisis, favourable or fatal, generally manifest themselves. The termination is sometimes effected by sweat, expectoration and general relaxation of excretaries, sometimes by suppuration and abscess. But though this be the more usual mode of proceeding, the course is not unfrequently rapid, the termination premature by suffocation from local plethora.

CHAP.
II.

Dissection.

If this form of disease be neglected, or treated feebly in the early period, it often terminates fatally. Adhesions are sometimes formed, during its continuance, between the pleura and the membrane which covers the lungs. In the more genuine form of the disease, the morbid appearances are usually confined to the substance of the lungs, the texture of which is sometimes suffocated, or rendered impermeable by a quantity of accumulated blood without evidence of regular inflammatory action; in general the morbid act is suppurative. The purulence, the product of the act, sometimes fills the cells without communicating with the bronchial vessels, sometimes it communicates and finds a passage through the trachea.—The lungs are considered as the primary seat of the disease; the effect notwithstanding often extends to the pericardium, and even to the substance of the heart itself. The heart, in such case, is inflamed, the surface red and rough; the

CHAP. pericardium is sometimes distended with water;
II. sometimes, instead of intervening fluid, it adheres
to the substance of the heart as if it were its proper
coat.—The symptoms are here so mixed, from con-
tiguity of parts, that it is difficult, if it be in fact
possible, to discriminate the relative degrees of di-
seased action in the different organs within the ca-
vity :—they are only known correctly when the body
is examined after death.

CURE.

Cure at Com-
mencement.

If the patient be submitted to medical care at an early stage of this form of disease, the line of proceeding is plain and simple, viz. abstraction of blood from a large orifice in the shortest time possible, and carried to the extent, whatever that may be, of effecting remission from pain and relaxation of stricture, in such manner that the patient become capable of breathing with ease and freedom under all modes of trial. Freedom and expansion of pulse, relaxation of surface, sickness, vomiting and evacuations by stool often supervene upon bleeding as managed in a proper manner. When the evacuations are copious and effective, the disease may be said to be cured; at least its course is arrested and its dangers are removed for a time. But as the dangers, though temporarily removed, are liable to recur after a short interval, it is advisable, with a view to prevent such recurrence, to administer emetic tartar so combined with opium, camphire and

nitre as to occasion more or less of nausea, to allay irritations and to excite and maintain a moderate and equable perspiration on the surface; an effect which will be rendered sure by the application of warm fomentations to the extremities.—If the disease be arrested by the means stated, the chances of recurrence will be generally precluded by covering the breast and sides with large and strong blisters.

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I think I may venture to say that if the case be submitted to medical care at an early period, that is, within twelve or fourteen hours from the commencement of indisposition, the cure is within command of the medical art: if it fail, it fails only through error in management. On the contrary, if the course be advanced to a late period, viz. the fourth or fifth day, the means, though still the same as those already stated, and still to be directed by the same principle, cannot be safely carried to the same extent in practice, and do not give the same promise of success to the effect however carefully applied. It often happens, in the condition under view, that the suppurative stage is considerably advanced before the patient is brought to the hospital. Where that is the case, the disease can only be prevented from going to the extremity of its course by nice discriminations of condition, and great decision and skill in the adjustment of remedies. Abstraction of blood still holds its place; and, though it cannot be carried to the point of arresting the disease precipitately as in the early stage, it is still necessary to carry it to the extent of relieving the

Advanced
Stage.

CHAP. II. distress of the lungs, and of effecting a change in the organic condition of the part. When that has been done by the abstraction of blood, and when the thorax, breast and sides have been covered with blisters, with the view of maintaining a strong superficial irritation and consequent discharge from the surface, an emetic—antimonial in preference, is to be given immediately, assisted by all the means which are calculated to give effect to the operation of emetics. Bleeding is to be repeated as occasion may require ; the repetition of emetics may also be proper, the effect aided by diaphoretics, fomentations to the extremities, muriate of ammonia, and other means which excite activity in the absorbent vessels of the lungs, which excite the tide of circulation towards the extreme surface, which attenuate the adhesive quality in the fluids, or which retard the course of the suppurative process.—These present themselves as remedies in the present case : they are to be employed in combination or succession, in such manner that the ground which may have been gained by the first step be not only maintained, but that positions be gradually advanced until the point in view be encompassed and assured.

Adhesive.

B. The next form of pneumonic febrile action is somewhat obscure in its history. It prevails epidemically at particular seasons and in particular districts of certain countries ; and, as left to its own course, it sometimes commits great ravages on hu-

man life. It belongs to the lymphous or phlegmatic base of temperament in excess, the act manifested in the interior substance of the lungs. The invasion is sometimes sudden, oftener gradual. Respiration is impeded, but not impeded by a sense of pain preventing the expansion of the chest. Cough is sometimes troublesome ; or rather the desire to cough, without the power to cough freely, is urgent ;—there is no expectoration where the form is concentrated. The pulse is usually slow as a febrile pulse—soft, regular and full, particularly in the earlier periods ; it is often irregular, oppressed, or intermitting in the latter. The eye is heavy and torpid—the white sometimes of pearly whiteness, sometimes sallow or dusky. The countenance is torpid and inexpressive—statue-like, pale and of a doughy appearance ;—sometimes there is a circumscribed pink coloured blush on the prominent part of the cheek. The heat of the surface is never high ; it is unequal at different parts. The skin is sometimes dry, oftener greasy, clammy and inelastic. The tongue is oftener clean than foul ; the saliva is thick and ropy. There is frequently an unpleasant mawkish taste in the mouth ; and thirst, rarely much increased in degree, is not satisfactorily satisfied by drinking. Respiration is accelerated : as the disease advances, the expansion of the chest becomes difficult—the sensation connected with impediment peculiarly distressing, viz. inability to inspire. Cough is rarely severe ; but it is ineffectual. Diarrhea is not uncommon : it often alternates with de-

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CHAP. II. lirium towards the close of the disease.—The blood, drawn from the vein and suffered to cool, ordinarily remains in an uniform mass of a dark azure blue ; it rarely, or it only imperfectly separates into parts in the first stage of the disease.

Dissection.

The lungs are not inflamed in the usual meaning of the word, that is, they shew no increased vascularity, at least no increase of vessels carrying red blood. The whole is solid, agglutinated into a mass by coagulated lymph so as to be impermeable to air ; the surface is sometimes covered with a thick coating like leather. Water is often effused into the cavity of the thorax, into the mediastinum, even into the pericardium : the larger vessels, near the heart, are often filled with pieces of coagulated lymph, which probably existing before death, must have materially impeded the passage of the blood through the heart.

CURE.

The cure of this form of disease is difficult, or more properly speaking perhaps, the obscurity of the symptoms is such that the practitioner rarely attains a true view of the condition at an early period ; consequently rarely applies remedies in sufficient quantity to produce a strong and decided effect. The dissection of the dead body shews what ought

to have been done ; and it often brings conviction, when too late, of omission and error.—If a patient, on whom the characters of the form of the disease now described are visible, be submitted to medical care at an early period, it is recommended that the body be immersed in a bath of high temperature, that it be rubbed with soap and scrubbed with hard brushes, so that the skin be warmed and animated in all its extent. When this has been done properly, it is further recommended that a vein be opened in the arm, and that blood be abstracted in large quantity, viz. from two to four pounds. The colour of the blood often changes, from dark red or azure, to bright red under the act of abstraction ; and, while the colour changes, the stream generally flows with increased force and velocity. Fainting, under bleeding, does not often occur in this form of disease ; but, though there be no danger from fainting or other accident in consequence of copious, even profuse bleeding, it is perhaps better not to go to the extreme point of safety at one abstraction. When the patient is removed from the bath, dried, rubbed dry with hot flannels, with oil and ammonia, and disposed in bed in a warm and well ventilated apartment, hot tea or other beverage, in which kali is dissolved in the proportion of a drachm to a quart, is to be given at frequent intervals ; and, at the distance of an hour, when the alkalized beverage may be supposed to have dissolved or rendered fusible the phlegm which lines the stomach and the interior of the intestinal canal, an emetic—antimonial in

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II. preference, presents itself as first in time among the remedies. The operation of the emetic is to be assisted by infusion of chamomile, in which is dissolved a certain proportion of prepared kali. After its operation is finished, a laxative is generally proper; and infusion of senna, with the addition of a certain proportion of kali and acetated water of ammonia, given in divided doses, is one of the best. If the disease, though diminished in degree, still exist notwithstanding the employment of the means alluded to, the vein is to be re-opened, the blood allowed to flow until the power of expanding the chest be perfectly recovered. The body is to be again rubbed with oil and ammonia, the muriate of ammonia given internally in large quantity, or white vitriol in such quantity as to occasion vomiting, followed by plentiful dilution with alkalized beverage, tea or other liquid. Sulphur—about two scruples or one drachm, mixed with honey in the form of electuary and given once a day, presents itself on this occasion as a remedy of some value. Large blisters, even so extensive as to cover the greater part of the thorax, rank among the preventatives of recurrence. They may be supposed to do this by stimulus of counteraction, if they have no direct effect in modifying the condition of the blood.

C. The two preceding conditions of pneumonic fever are strictly speaking simple conditions, the morbid act being, for the most part, confined to one

series of parts, and generally confined within the substance of the lungs themselves, whether the act be suppurative or adhesive. The form now under view is more complex; inasmuch as the act is manifested on the sanguiferous, lymphous or serous system of vessels at the same time, or in succession; hence the effect is suppurative, adhesive, or excretive.—This disease, which is the form of malady usually termed pneumonia, varies in degree of force and also in mode of action according to the predominance of the existing constitutional temperament, viz. sanguine, lymphous, or serous. It usually begins with cold and shivering, sometimes with coldness and shivering of intensity, sometimes with irksome sensations, distressing pains in the loins and limbs, stricture and tension about the joints. There is, for the most part, more or less of head-ache, the pain sometimes dull and irksome with giddiness, sometimes sharp, lancinating and rending under the act of coughing, of moving, or of being rudely moved. The heat of the body is usually higher than the natural heat; sometimes it is acrid and pungent, sometimes soft and mild. The skin is sometimes dry, harsh and hot; sometimes damp, greasy and cool. The eye sometimes glistens with animation; sometimes it is dull, torpid and vacant. The countenance corresponds in some degree in its appearance with that of the eye, sometimes flushed, confused and anxious, sometimes dull and heavy, pallid and greasy, or dingy. Nausea, even vomiting is not uncommon, especially where cough urges

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without expectoration. The body is generally costive in the early stage; often loose, even purged in the latter. Thirst is irregular—sometimes great, accompanied with hot breath, a foul and dry tongue; sometimes it is moderate, the tongue foul, but moist. The general sense of feeling is often irksome, painful and distressing. There is neither rest nor sleep; there is often dozing and drowsiness. Respiration is generally hurried—of a narrow compass—sometimes without sense of pain or assignable cause of impediment. The horizontal posture is irksome—sometimes intolerable; the patient seldom lies equally well on both sides. Cough is more or less troublesome; it is sometimes sharp, dry, incessant, sometimes at intervals only—moist or dry as may be. Expectoration is sometimes thin, acrid and scanty; sometimes it is copious and thick—tough or glutinous; sometimes fluid, free and bloody.

The disease formed on the base here given, proceeds towards a favourable or fatal termination with periodical abatement and aggravation, but rarely with such abatement and aggravation as can properly be termed remission and paroxysm. The symptoms acquire force in the progress of the course; and the disease terminates sometimes on the fourth or fifth day, more commonly about the seventh. In the favourable case, the pulse expands, the skin relaxes, expectoration becomes copious and free, sometimes bloody, sometimes concocted, sometimes copious,—crude or jelly-like. In the unfortunate case, the pulse contracts in volume, increases

in frequency, loses regularity, hesitates or intermits; the skin remains dry, or becomes damp and greasy —without warmth and animation. Expectoration diminishes, sometimes ceases altogether;—respiration becomes more and more laborious; watery diarrhea supervenes not unfrequently; sometimes it interchanges, or is superseded by delirium, which is sometimes of a low kind, sometimes high and outrageous:—death usually takes place within the eighth day. In other instances, suppurations are formed in the substance of the lungs: the acute form is then judged, the final event protracted, whether the suppurated matter be confined in a sac, or, penetrating into the bronchial ramifications, find passage through the trachea.

Dissection.

The appearances, which present themselves on dissection of the dead body, are more varied and more extensive in the present than in the two preceding forms. There is here for the most part adhesion, sometimes extensive and firm, between the membrane which covers the lungs and that which lines the thoracic cavity. The substance of the lungs themselves is often inflamed, partially dense and firm like liver; sometimes it is suppurated, the matter confined in a sac, or communicating with the bronchia, discharged into the trachea according to contingency. In other cases, the substance of the lungs is conglutinated partially or generally,

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so as to be imperfectly permeable to air; and in many, the bronchial vessels are filled with secretions of various consistence and quality. In some instances, the thoracic cavity is filled with pale or clear watery fluid; in others, with a fluid of a whey colour in which float numerous shreds of coagulated albumen. In either case, if the quantity of fluid effused be considerable, the lungs are compressed, so as to be altogether unfit for respiration. The heart, in this form of disease, often partakes of the morbid act, the traces of which are so conspicuous in the lungs. The pericardium for instance is often inflamed; it adheres irregularly to the contiguous parts, sometimes to the surface of the heart itself. Where it does not adhere to the heart, it generally contains fluid in unusual quantity—sometimes clear water, oftener turbid, dirty looking serum in which float shreds of coagulated albumen. The substance of the heart itself is sometimes highly diseased—covered exteriorly with a crust of albumen like pancake, the surface underneath the covering being red and fretted as if under an act of unnatural secretion.—The cavities of the heart and some of the larger vessels are in many cases filled with firm substance like amber.

CURE.

The means of cure, and the principle which directs the application are the same here as in the preceding; the mode and measure vary according

to circumstance. If the patient be submitted to medical care during the first twenty-four hours from the attack, whether the predominant feature of the action be manifested on the sanguine, lymphous or serous base of temperament, it is advisable to immerse the body in a warm bath of high temperature; and, after a certain continuance under immersion, it is recommended, as indispensable to further proceeding, to open a vein in the arm, and to abstract blood in quantity sufficient to effect a change in the condition of the suffering organ. It is impossible to say *a priori* what quantity will be sufficient to effect this purpose; but, whatever the quantity may be, I beg the physician to bear in mind that the effect must be assured, that is, the power of expanding the chest, without pain or impediment, must be restored before the operator is permitted to bind up the arm*. After the arm is bound up, the pa-

* I take the opportunity, on this occasion, to subjoin a paragraph from a letter, written in August, 1818, by a medical officer in the garrison of Gibraltar. The matter of it is important to the elucidation of the present subject. Pneumonia:—"of this disease 48 have occurred at Gibraltar. This is a greater number than had appeared in the regiment for the last three years. The symptoms were usually of a severe description; and a spasmodic affection of the diaphragm appeared in many instances: the lancet was principally depended upon. I placed my reliance for the removal of the local inflammation on early and copious bleeding, regulating of course the abstraction of blood by the various circumstances of age, strength and severity of inflammatory symptoms. With the employment of the lancet, I conjoined purgatives and the use of an-

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tient is to be suffered to remain for twenty minutes or half an hour in the bath, with a view to ascertain whether or not the change contemplated be perfectly attained. If the point be gained, the body is to be removed from the bath, wiped dry and rubbed dry with flannels, an emetic given immediately, under all the forms of preparation that are suitable to the case. After the operation of the emetic, alkalinized infusion of senna, with repeated doses of acetated water of ammonia, presents itself as a proper laxative, and as an efficient remedy for the purpose of opening the bowels and at the same time of acting upon the skin.—The ground, which may have appeared to have been gained by the processes alluded to, employed in combination or in succession, is often assured by the application of blisters to the breast and sides, especially as aided by large doses of muriate of ammonia, sometimes by small doses of

“ timonials in nauseating doses, together with the warm bath: “ under this treatment they all got well.—In one case of pneumonia with spasm of the diaphragm, I took away eight pounds “ of blood in five hours; from another, I took away ten pounds “ in thirty-one hours; and from a third, eleven pounds in thirty- “ six hours. The last patient lost thirteen pounds of blood in “ the course of the disease. He was discharged to duty on the “ fourteenth day from the date of admission.”—He adds, “ it is “ astonishing how quickly patients recover from the debility “ induced by copious and repeated venesection.” The above extract is from a private letter; I should not have taken the liberty to put it before the public, if I did not believe its writer to be a man of veracity: I know him to be a man of judgment.

powder of ipecacuanha to which are added some grains of soda, the ipecacuanha so measured and so timed as to excite and to keep up more or less of nausea.

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If the above means be properly and diligently applied in the early stage of the disease, the course is, for the most part, arrested, and health is speedily restored if all the necessary considerations which bear upon convalescence be duly attended to. But if the disease be advanced in its course before it be submitted to treatment, or if it be treated by feeble means so as to meet with little interruption from the treatment, the dangers increase and the chances of the good effect of remedies diminish. Abstraction of blood still holds its place among curative means; and, notwithstanding advanced progress and apparent debility, the quantity abstracted must still be such as brings relief, even if it should amount to three or four pounds. If the expectoration be tough and scanty, the inhalation of steam of warm water, to which ammonia, mustard or other stimulant is added, is often of service. Dilution with beverage, in which prepared kali is dissolved in greater or smaller proportion, is essentially useful: emetics of white vitriol are of the greatest benefit, especially where the secretions have been prematurely suppressed. Seneka is recommended in several conditions of this disease; but my own experience of it is not extensive. If cough be teasing, dry and irritating, or if it be excited by thin and acrid defluxion, opium, joined with antimonials or ipecacuanha,

CHAP. II. may be given with safety and advantage: opium, if the expectoration be tough and glairy, is not only improper, but dangerous in an extreme degree.

CASE I.

Chatham, *January 9th, 1801*.—Snipe was brought to the hospital on the *6th* inst. with symptoms of fever and severe cough. The countenance was dull, cold and phlegmatic. Some blood was drawn from the arm, but not to great extent; a purgative mixture was given immediately afterwards: The blood did not separate when allowed to rest;—it remained an homogeneous mass like jelly of a sky-blue colour. *7th*,—He muttered in the night as if delirious, but notwithstanding slept at intervals. The breathing thick and laborious; the chest not duly expanded in respiration, but not restrained by sense of pain or local impediment. There is cough, but no pain from coughing; expectoration not copious,—it is glairy and jelly-like. Large blisters applied to the chest: squills, assafœtida and gum ammoniac given in quantity as expectorant. Pulse small and confined: respiration short. *8th*,—pulse contracts itself; expectoration decreases; the countenance pale and pasty; no complaint of pain any where; comatose, or drowsy. *9th*,—coma, stupor, eye heavy and dull; expectoration suspended. Died in the evening. *The body opened*.—The lungs adhered firmly to the *pleura costalis*, particularly at the anterior parts which were covered with a yellowish matter, viz. a tough glutinous membrane like leather. All the interstices between the lobes were filled and agglutinated by jelly-like substance; there was a quantity of coloured fluid in the cavity of the thorax: the pericardium contained matter of the same kind; the surface of the heart and root of the aorta were covered with a yellowish crust.

CASE II.

Chatham, *January 12th, 1801*.—Cox, a large bodied man, of a heavy and torpid aspect, was brought to the hospital in the

course of the day with symptoms of pneumonic fever. A few ounces of blood were drawn from a vein in the arm; a blister was applied to the breast, and he felt a little relief. 13th,—easier, but not satisfactory. 14th,—attacked in the night with palpitation and uneasiness at the præcordia of a peculiar kind; respiration short and thick—oppressed and imperfect—or without free expansion of the chest. An efflorescence has made its appearance on the face and breast not unlike measles, which prevail in the garrison. He was bled largely, (the quantity not stated) relieved in consequence, but not perfectly. The respiration continues to be laborious—with agitation at the præcordia of an unusual kind. He attempts to cough, but he cannot effect an open cough—and he does not expectorate. The pulse is strong and regular, and nearly natural in point of frequency; the heat is moderate, somewhat higher than the heat of health; thirst considerable, but not urgent. The vein was opened in the evening, but the orifice was small and a few ounces only were obtained. 15th,—respiration somewhat more free after bleeding: he slept a little, and expectorated a little glairy mucus; had several evacuations by stool; the lips and countenance change colour frequently, appearing at times of a faint purple hue; the ideas are not under command—they wander after absent things; the eye is clear and glossy. Ten o'clock A. M.,—respiration high and laborious—confined, but confined by no impediment from local pain, or other assignable cause. Emetic: he vomited a little and expressed material relief, but still complained of palpitation at the præcordia—a sense of burning and a kind of uneasiness that words could not express. He expectorated a little glutinous matter—brought up with difficulty. 16th,—countenance of a leaden colour; expectoration suspended; the lungs have lost their expulsive power; he attempts to cough, but cannot effect it; the pulse frequent, weak, intermitting:—diarrhea and delirium alternated with each other for the two last days. He died and was *opened*.—No adhesion or marks of external inflammation about the lungs; no water and no matter visible in the interstices or cells; the substance fair and smooth exteriorly; the interior agglutinated into a solid

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CHAP. II. mass, not permeable, or scarcely permeable to air; yet, except in impermeability, the lungs presented no morbid appearance. The heart was uncommonly large and full of blood; there were coagulations of unusual firmness in the larger vessels.

CASE III.

Chatham, *January 14th, 1801.*—Bingham had been ill of fever in pneumonic form, seemed to recover; and, after a few days of convalescence, was attacked suddenly seemingly with a fit of asthma. Æther and laudanum were given in large doses, but without benefit: the pulse was not perceptible; the skin was cold; the countenance livid; the lips livid; the surface bedewed with a glassy cold sweat; respiration performed only by gasping at long intervals; the intellect clear. He died and was *opened*.—The cavity of the thorax filled with water; the lungs collapsed as if compressed by weight of fluid; the pericardium distended with fluid to a great extent; the heart compressed by its pressure so as to appear of a small size.

CASE IV.

Chatham, *April 12th, 1801.*—Cook brought to the hospital on the 9th, complaining of distress and uneasiness in the chest, particularly about the site of the heart. The attack was sudden,—the countenance dry and pasty from the beginning; no perceptible increase of vascular action. Bled to the quantity of twenty-four ounces: emetic—after its operation was finished, immersion in the warm bath. No material relief; uneasy sensations rather than pain still continue in the chest, especially in the left side and under the sternum. 13th,—scanty expectoration—tough as glue, and of a pale orange colour; the pulse small, frequent and compressible—without elasticity or force; the tongue more red than natural—not foul; the skin cool and generally dry; the countenance dingy with circumscribed flushings of the cheeks; pains, or rather uneasy sensations about the region of the heart; the body open,—more properly purged;

the eye glassy—half open ; the aspect cadaverous. 14th,—the tongue neither foul nor dry ; the eye glassy—half shut ; flushing of the cheeks—circumscribed to the cheek bone ; the skin of a dingy yellow hue ; the pulse frequent, small and weak. He died in the evening and was *opened* next day.—The lungs adhered to the *pleura costalis* in various places ; their surface was covered and their interstices were filled with a tough, greasy yellow matter : water was effused into the cavity of the thorax and also into the cavity of the pericardium ; the pericardium and mediastinum were covered with greasy, tough matter of the same kind as that which covered the surface of the lungs and filled their interstices ; and, besides this, there were amber-coloured coagula of a very firm consistence in the larger vessels near the heart.

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CASE V.

Chatham, April 16th, 1801.—Pack, an athletic man, of a full habit and florid complexion, seized with a fever in pneumonic form on the 12th. Bled : an emetic : after the emetic, small doses of calomel at intervals. Appearances were rather promising for the three first days though the breathing still continued oppressed : the expectoration consisted of mucus mixed with blood—equally mixed. To-day, the expectoration is less free ; there is pain and uneasiness in the left side with a sensation as of choking ; the belly loose ; the intellect rather confused. Bled to the quantity of a few ounces : blisters applied to the breast and sides. 17th,—rather easier in the morning ; towards evening delirious ; the expectoration suspended ; breathing very laborious ; cheeks flushed—at times livid ; the pulse intermits—scarcely more frequent than natural and not strong. 18th,—delirious in the night ; now more calm,—but still confused ; scanty expectoration ; respiration somewhat more free ; intermission of the pulse less remarkable ; vascular action upon the whole more energetic ; the skin dry ; the tongue dry ; feelings less irksome. 19th,—the night more tranquil ; respiration more free ; no perceivable intermission of the pulse ; expectoration increased, viz. thick, white mucus—con-

CHAP. cocted—not tough and glairy; the skin dry; no delirium.
II. 20th,—expectoration more free; pulse regular—not frequent; tongue still dry and red; no actual crisis. 21st,—seems better—but without signs of crisis; the pulse peculiar—not easily defined—without energy and expansion; expectoration more free; the voice hoarse as if there was impediment about the throat. 22nd,—seems better,—the dangers not past; the pulse peculiar; the skin and tongue dry. 23rd,—seems to improve. 24th,—the same. 25th,—no cough; no expectoration; hoarseness continues; the cheeks flushed occasionally. 26th,—much the same. 27th,—does not advance; respiration more laborious; expectoration suspended; hoarseness continues; the cheeks flushed; the general aspect withered and dingy; the tongue dry; the pulse more frequent than natural—and irritated withal. 28th,—loses ground. 29th,—respiration more difficult; the cheeks flushed; the countenance dingy; the hoarseness continues; the pulse singular. 30th,—worse. *May 1st*,—worse. 2nd,—he died in the morning. *Opened* in the afternoon.—The lungs adhered every where to the pleura; the pericardium adhered so firmly to the heart as if it was its own proper covering; the substance of the heart itself was singularly changed, viz. thin and flaccid as if it had not been of muscular structure—its vessels in a manner bloodless. The larger vessels near the heart were filled with firmly coagulated masses of lymph; and, together with this, there were chalky concretions in the substance of the lungs; the whole interior surface of which was so changed as to be nearly impervious.

CASE VI.

Chatham, *April 20th, 1801*.—Harris, attacked on the 18th with pain in the right side accompanied with symptoms of fever. To-day,—bled largely and blistered: no relief. 21st,—bled again: no relief; the seat of the pain in the right side under the right breast—severe in the act of common respiration, intolerable in attempting to cough or expectorate. 22nd,—no relief. 23rd,—no relief. 24th,—died in the morning. *Opened*

in the afternoon.—The right lung impervious—solid like a steatoma adhering firmly to the pleura—the connecting medium thick and firm as leather; the other parts within the cavity of the thorax not materially diseased.

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CASE VII.

Chatham, *May 9th, 1801*.—Bailey, who had been in hospital about three months ago, recovered and was discharged in apparent health. He returned about two weeks since, suffering under pneumonic affection; it had been of some standing and had considerably impaired the health. He was bled three different times, but not to great extent at one time; the side was blistered repeatedly, and he appeared to obtain slight temporary relief. The fever subsided, at least abated; marks of hectic were evident. He sweated profusely at times; the face was dirty and greasy as if it had been washed with dirty water and imperfectly dried; the cheeks flushed occasionally as in hectic. He coughed much and violently; expectorated a little tough or frothy matter, but no concocted secretion, or actual purulence. He breathed with difficulty and labour, and latterly could not breathe at all except in the erect posture; the countenance was greasy and dirty; the skin clammy; the eye glossy. He died on the *9th* of *May*,—the body was *opened*.—Matter, to the quantity of a quart or more, was contained in a sac which was still entire;—no part of the contents had yet found passage into the branches of the bronchia.

CASE VIII.

Chatham, *May 16th, 1801*.—Mc'Mullin—brought to the hospital in the evening of the *11th*, breathing most laboriously but without pain in the breast. The eye was muddy; the tongue foul; an emetic was given immediately and a blister was applied to the breast. *15th*,—the breathing very laborious and difficult; he coughs and expectorates something glutinous; the countenance and lips of a leaden colour; the aspect dull and

CHAP. clouded; the tongue foul, but moist; the heart beats high—
II. without corresponding force in the arterial pulsations. Bled to the extent of fifteen ounces—somewhat relieved; the pulse did not expand in consequence; the cough soft and not violent; little or no increase of external heat; the pulse regular—not much increased in frequency; the heart beats, or struggles; head-ache is rather severe. To-day,—bad night; no complaint of local pain; the circulation fails; the skin and countenance are cold and livid; the pulse is scarcely perceptible; the motion of the heart itself is obscure; the stomach inflated;—black matter like grounds of coffee ejected by vomiting. Died in the course of the day: the body *opened*.—The right lung adhered to the pleura, the connecting membrane tough and strong and bespangled with curdy substance like coagulated milk. A whey-coloured fluid floated in the cavities and interstices; the lobes of the lungs were held together at their outer margins by a tough yellow membrane. The veins of the pleura and mediastinum, &c. were turgid,—filled with black blood; the pericardium red and inflamed exteriorly; the cavity distended with whey-coloured fluid; the heart itself covered closely by a tough yellow membrane bespangled with curdy looking points; great masses of congestion among the parts contiguous to the heart; gangrene commencing in the small intestines:—general disposition to watery effusion.

N. B. The above cases occurred in England, and they are inserted in this place---not as examples of practice, but as illustrating the ravages of a disease that was only feebly opposed by art. The histories present some peculiarities, especially in what respects agglutination of the lungs, that are rarely observed in tropical climates.

CASE IX.

Guadalupe, *December 27th, 1813*.—David Oliphant, aged 30, habit full, attacked, on the evening of the 26th instant, with symptoms of violent pneumonic fever and admitted into hospital on the afternoon of the 27th. He coughed much; breathed with difficulty; pain in both sides of the chest—increased in

coughing or breathing deeply; thirst considerable; pulse frequent and sharp; tongue white; skin hot; body costive. Bled to the extent of forty-four ounces at the time of admission,—blood buffed on the surface: calomel gr. vi. extract: colocynth, pulv. jalap gr. viii. immediately after bleeding: tepid bath; and, in the course of an hour, infusion of senna with sulphate of soda. 28th,—the pain in the right side of the thorax relieved; that in the left still continues together with cough; the pulse frequent and sharp; the tongue is white; the body has been freely opened. Bled to the extent of thirty-two ounces: purging mixture—with a portion of emetic tartar sufficient to excite nausea: blister to the side. Evening,—James' powder gr. vii. 29th,—pain of the breast and sides removed; pulse soft—nearly natural; tongue clean; body open. James' powder repeated. 30th,—cough gone; body open; tongue clean; pulse natural. 31st,—no complaint: James' powder repeated. *January 1st*,—improves. 5th,—discharged in perfect health.

D. The forms of pneumonic disease described above rank indisputably in the febrile class. The forms included under the present head are varied, so varied indeed that there may be doubts, with some, concerning the propriety of referring all of them to the operations of a cause strictly and properly febrile. It is generally believed that phthisis pulmonalis is a disease of rare occurrence in tropical climates. I do not know that the belief is well founded. The returns of military hospitals, which must be regarded as authority, show that the number of persons who die of pulmonary diseases, whether proper phthisis or contingent ulcer of the lungs, is as high in the West-Indies as it is in most of the temperate latitudes of Europe. I admit that phthisis, as connected with the scrophulous habit, is compara-

CHAP. II. tively rare ; I cannot reject the evidence of returns which shews that congestions, various forms of changed structure and even ulceration are frequent and fatal in this climate, particularly among Africans, the lungs of few of whom, when death happens from a contingent cause, are found on dissection to be in a perfectly sound state. It is known that persons of a consumptive habit, even persons far advanced in consumption, sometimes recover their health by migrating from Europe to a tropical climate; as also that persons, who are threatened with consumption in the West Indies, sometimes recover their health by returning to Europe or other temperate latitude.—Hence, as there is the authority of fact on both sides, it is reasonable to conclude that there is more in the sea voyage and in the change of climate, which changes the condition of habit, than in the tropical climate itself, simply as climate.

The commencement of many of the forms of pulmonary disease, as they appear among the soldiers of the army, European or African, is obscure. It is sometimes recognized only by a short dry cough, by more or less impediment to respiration under exercise or acts of exertion, by more or less acceleration of pulse under exercise, viz. walking, running, or ascending a height. The flesh wastes fast in some, in others not. Expectoration takes place in many, perhaps in most : it is of different kind and character—sometimes purulent, sometimes mixed, and sometimes changed secretion of an undefinable

nature. Sleep is seldom sound and undisturbed in pulmonary disease : it is often interrupted by coughing, sometimes by disagreeable perspirations,—and sometimes by difficulty, or impossibility to lie on one side. Where the flesh wastes, the strength declines in most cases—sometimes slowly, sometimes rapidly. Chills and flushings of heat are observable in the early stage in some ; in others not until a late period, and, in many, not at any period. The various forms of diseased action, which take place in the substance of the lungs and parts nearly connected with the lungs, advance by slow degrees in some cases, by rapid steps in others. In many, the existence of the derangement is of so little detriment to the performance of the ordinary business of life, and the signs of its existence so obscure, that a pulmonary disease is only known to have existed by inspection of the body after death.

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II.

Dissection.

The morbid appearances in the lungs of those who die of pulmonary forms of disease, are of considerable variety. 1. The substance of the lungs is changed partially or generally to something like *amadou* or touchwood, without marks of open ulceration. Respiration in such case is not free : it is obviously hurried by exercise and disturbed by exertion. The general health is impaired ; but it is rarely so impaired as to occasion the subject to be sent to the hospital. Blood, drawn from the veins

CHAP. II. of persons labouring under this form of disease, is ordinarily pale in colour—not unlike old Madeira wine. 2. The lungs are not ulcerated, or they are ulcerated only partially ; the structure is notwithstanding changed—converted, in some places, into chalky concretion, or crowded with gritty matter like sand stone. In persons of this description, short cough, impeded respiration and impaired vigour are the conspicuous symptoms. 3. In other and more numerous instances, fatty, or cheese-like substance of different magnitude and different consistence is dispersed throughout the lungs, some of the substances ulcerated, some inflamed, others indolent. The pulse in such case, where the previous history is known, is ordinarily more frequent than natural, the cough is troublesome, alternate chills and flushings are common, marks of hectic obvious, expectoration irregular—sometimes pure purulence, sometimes purulence intermixed with phlegm and mucus—the mucus glairy and glutinous. 4. Certain parts of the lungs are thickened, firm and solid as the substance of liver. The structure is changed without marks of what is usually termed inflammation ; it is impermeable to air and of such appearance as if it had existed for some length of time. 5. In numerous instances, and generally in consequence of pneumonic fever in subjects of the sanguine temperament, abscesses of greater or less extent occupy the substance of the lungs after death.

CURE.

CHAP.
II.

The various forms of disease, ranked under the head pulmonary, are often so obscure and ill marked at their commencement, that the foundations of the derangement are deeply laid before the case is submitted to hospital treatment. Where the structure is changed into fungous amadou—generally or partially, into chalky or sandy concretion, into cheesy steatom or other tubercle, into solid, fleshy substance like liver; or, where suppuration has taken place, and open ulcer, from tubercular abscess actually exists, the best aids of the art are ineffectual: if they mitigate pain and protract existence, they rarely effect a radical cure. But though the case, according to my own opinion, be almost hopeless after a certain stage of progress, I cannot help believing that if aid be applied in time, that is, before the disease has developed and fully established its character, the course may be arrested with safety and effect, health restored and permanently established by well considered means judiciously applied, and perseveringly persisted in for a length of time. The means recommended for this purpose are harsh: they do not imply danger to the life of the patient, viz. abstraction of blood, in quantity sufficient to effect a decided change in the condition of the diseased organ; and, immediately after that change is effected, vesication of the whole or greatest part of the breast and sides by blisters. The effect, thus produced by the first impression, is to be supported

CHAP. II. by setons, caustic issues, and preferably perhaps by discharges produced by moxa. These constitute the cardinal means of remedy. Emetics promise benefit by the general act which the emetic operation produces on the system; and of emetics, white or blue vitriol has the preference, particularly where there is disposition to pituitous congestions. Flowers of sulphur made into an electuary with honey, sometimes with the addition of a few drops of balsam of capivi, viz. the size of a nutmeg given every night at bed time, though a vulgar remedy, is notwithstanding a remedy which has very happy effects in many cases of pulmonary disease, particularly in the catarrhous or mucous consumption. Mercury is useful in certain forms of sanguineous or pituitous congestion; it is injurious in others, particularly in the scrophulous or irritable habit, viz. in the form more commonly termed phthisis.

The right management of diet and regimen is an object of primary importance in pulmonary diseases. In regard to diet, animal food of every kind is rigorously interdicted. Milk, whey, and the juice of pectoral herbs, viz. coltsfoot, horehound, &c. according to my own opinion, ought to constitute the whole sustenance. While the diet is simple, the regimen ought to be such as maintains the habit in activity. If there be no marks of actual organic destruction, exercise in a carriage, or on horseback is useful; and, if severe exercise on horseback, such as hunting, can be sustained and pursued, hopes of recovery may be entertained with some confi-

dence. Here the rapid successions of pure moist and heavy air of moderate temperature act beneficially: they are in fact the means which most safely and most effectually maintain and confirm the healthy action of the lungs, where the continuity of structure is entire. Where that is broken and organic irritability highly increased, medicated airs, such for example as scarcely support flame, may be supposed, in reasoning on the case, to be serviceable; and it is perhaps on this ground that the air, in the 'tween decks of a ship laden with ill cured sugars, has occasionally operated very fortunate changes on the health of persons far advanced in pulmonary consumption. The occurrences alluded to were contingent; the fact is authentic: it is probable that the knowledge of it may be usefully applied to a medical purpose, and, analogously with it, the vapour from tar has been lately brought into notice. Besides exercise on horseback and medicated airs, a sea voyage, implying a change of climate, more particularly from cold to warm, from hilly, dry and healthy to level, moist and aguish, recommends itself strongly as judged by the reason of the thing; it is found to be useful, as tried in experience, on many occasions.— It is by conjecture only that we attain an idea of the nature of the morbid changes which obtain in structure of the lungs; we know, with considerable certainty, to what extent we can safely go in the application of means which counteract or subvert the bases of these changes of whatever kind they may

CHAP. be; and we also know, when the base has been subverted, the quantity of power which other means possess in exciting and maintaining the forms of action which are analogous with those of health.

CASE I.

March 4th, 1815.—A man of the 18th regiment of foot, recently arrived from England, was brought to the hospital at Barbados on the evening of this day. He had been unwell for two or three days on board of ship, but did not give a distinct account of himself. He breathed with difficulty and complained of pain in the chest, particularly in the left side. There was no increase of heat on the skin; the pulse was small and frequent; the skin was dry; the lips dry; he crept together in an odd manner. Bled to the extent of two pounds. *5th*,—bled to the extent of two pounds:—somewhat relieved; the pulse still low, obscure and frequent; the skin dry; the countenance rather improved; respiration more free. *6th*,—much the same. Evening,—uneasiness recurred; inability to expand the chest; he refers the sense of impediment or constriction to the left side near the heart; the pulse small and frequent; cough frequent and ineffectual. Bled to the amount of two pounds:—somewhat relieved. *7th*,—slept in the night; does not complain of pain unless when he coughs or swallows; pain under the short ribs in the seat of the spleen, particularly when the part is pressed; the pulse frequent—not free and expanded; the skin dry; he breathes high and laboriously; lies on the right side only; creeps together in an unusual manner. *8th*,—delirious in the night; pulse small and frequent; skin damp and soft; the eye clear; breathing less laborious; no pain at the short ribs on pressure; feeble pustular eruption at the angles of the mouth. *9th*,—slept in the night; now sensible; the pulse so frequent that it can scarcely be counted; the skin damp and soft; the tongue clean; the eye clear; breathing high and laborious—

performed by elevation of the shoulders; does not complain of pain. Died in the afternoon: the body *opened*.—The parts within the cavity of the cranium sound in appearance; no marks of inflammation, and no effusion of fluid. The right lung adhered to the pleura—the substance not materially diseased; the left lung firm and dense as liver—impermeable to air; the structure perfectly changed but without marks of inflammatory action, without suppuration, or even agglutination by means of coagulated lymph; the substance red, solid and in some manner fleshy:—the spleen adhered to the contiguous parts—enlarged in size by congestion.

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II.

CASE II.

January 26th, 1815.—A man of the royal West-India Rangers, lately arrived from England, died in the hospital at Barbados some days after his arrival. The history of this person was not known; his appearance indicated that he had been at some time of his life in a station superior to that of a common soldier; the only information respecting his disease was obtained from dissection of the dead body. *Opened*.—The parts in the cavity of the cranium shewed marks of inflammation apparently of some standing; for, besides turgid blood vessels, there were close and firm adhesions at the falx, effusion of water under the *pia mater*, and more than the usual quantity in the lateral ventricles. The lung of the right side adhered firmly to the pleura, the substance of the lung itself was of a dark colour and solid as the substance of liver—impermeable to air. The liver adhered to the diaphragm; enlarged in size and streaked through its substance like marble.

CASE III.

March 25th, 1815.—A man of the York Rangers, lately arrived from England, had been in hospital on account of an infectious fever which he contracted on board of ship in the passage. He recovered and was dismissed to barracks—apparently in health. He returned in a few days, under symptoms which

CHAP. II. threatened life. The pulse was small and frequent; he coughed and desired to expectorate but could not get any thing up; he breathed high and laboriously, and also complained of pain in the seat of the spleen. He died in about twenty-four hours after he was admitted, and in about three days after he had begun to droop. *Opened*—The left lung solid and dense as liver, totally impermeable to air—the structure changed—the substance not gorged by subsidence of blood. The pericardium contained more than the usual quantity of fluid: the spleen was at least three times its natural size—gorged with black and clotted blood: the liver large in size, not apparently diseased, but presenting an external callosity which penetrated about two inches into its substance, evidently the cicatrix of a wound from a pointed instrument.

E. *Pneumonic Febrile Action—the Mode Retrograde or Liquescent.*

The forms of pneumonic fever noticed in the preceding pages are such as exhibit the steps of a progressive morbid act, by the operations of which unnatural products of various kinds are brought into existence. The cure, as already stated, consists primarily in arresting the diseased action, secondarily in forcibly exciting a form of action analogous with that of health. The form now under view is different,—the course regressive or retrograde, that is, stagnant in its first stage. It belongs to the gangrenous temperament, whether connected with general epidemic causes, or causes that are local, partial and artificial. It occurs, not unfrequently, in periodic fevers of the single tertian type; especially in the cooler months of the year, where the sub-

jects of it are stationed on eminences at the margin of ravines, or in narrow vallies between mountains in the vicinity of swamps and other foul grounds. It also occurs sometimes in the more concentrated of the continued ; especially in very hot and very dry weather in crowded barracks or crowded transport ships: it is a frequent form of relapse in crowded and infected hospitals in every country during damp and foggy weather.

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This form of disease sometimes commences in a slow and insidious manner. The countenance becomes lurid, sometimes livid as in sea scurvy: respiration is impeded—not obstructed by a sense of local pain. In other cases, it comes on suddenly. The countenance becomes dark and grim: deep and heavy sighing, with a sense of inability to expand the chest, is prominent among the symptoms; the pulses of the heart and arteries, often regular as to time, are without energy—low and in some manner oppressed.

Dissection.

The dissection of those, who die under this form of disease, shows various forms and degrees of sanguineous congestion, sometimes in both lungs, sometimes in one, and sometimes in one lobe only. The congested blood is often fluid as gore—and generally diffused through the organ ; sometimes, while fluid, it is circumscribed, as if the gangrenous act had exploded on one point only.

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II.

CURE.

The management of cure implies a great deal of difficulty. As the blood moves slowly or stagnates in the substance of the lungs, it is evident that abstraction from the veins is the direct means of urging to movement; and of thereby restoring the circulation to something like equal balance. The end is obvious, desirable and essential; but it is not attainable without various accessory aids, some of them not easily procured or easily adjusted when procured. Immersion of the whole body, or of the feet and legs in a warm bath of high temperature, presents itself as primary and principal in forwarding the good effect of bleeding. If the stagnation arise from excess of quantity accumulated through the operation of a febrile cause, abstraction of blood, by diminishing quantity, has a tendency to remove the existing congestion; but, though this be true, it is also true that mere abstraction is often not only ineffectual but dangerous, having a tendency in its simple effect to accelerate a fatal collapse. A train of stimulations, judiciously directed to support circulation in the extremities and on the surface of the body, stimulation of the lungs by successions of pure, cool and dry air, are essentially necessary to assure the salutary object, or to maintain it when temporarily attained. The quantity of blood, required to remove the primary congestion, amounts to a high measure; the measure cannot be committed to prescription; it only

can be judged by experiment made under the eye of the physician himself. Besides bleeding, aspersion of the face and breast with cold water, gestation in the open air after bleeding, blisters to the chest, with a view to stimulate the surface, and thereby to prevent the chances of recurring torpor on the lungs, rank among the chief of the accessory aids. These will, I believe, generally succeed in the case alluded to, if they be applied in time and in their places ; but, if the congestion be the effect of a sudden explosion which, in a manner we do not well comprehend, exhausts the activity of the vital principle, though the base of the proceeding is the same, the manner of conducting the different steps of the process implies much difficulty. The discriminations of conditions are not easily made ; and, though it be necessary that blood be abstracted in the case under view, it can only be abstracted with safety in small quantity at one time ; it is however necessary, even here, that the abstraction be repeated at short intervals until the point in view be gained. Immersion in the warm bath, fomentations to the extremities, and more particularly gestation in the open air which, in as much as it comprehends the means of applying the congenial stimulus to the organ of respiration with force and impression in frequent succession, may reasonably be considered as an accessory aid of great value.

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II.

SECTION II.

*Cardiac Form of Febrile Action—the Course
Progressive.*

A. A peculiar form of febrile action manifests itself prominently on some occasions on the organic substance of the heart, chiefly in the lymphous habit. I give to it the designation of *cardiac*, though I am aware of the ambiguity of the term*. The act is adhesive; the effect is augmentation of substance. The form is common in some countries in particular districts, even so common that it may be considered as endemial; it rarely appears in others. The island of Trinidad produces a great number of examples of it, especially among the military who are destined to garrison that island. It usually commences suddenly, sometimes as intermit- tent or remittent fever—sometimes as continued fever. The symptoms, by which it is principally characterized, consist in peculiar agitation and frequency of pulse under the slightest bodily exercise, viz. walking, attempting to ascend a height, or stair, &c. Besides the increased numerical frequency of pulse then so noticeable, the stroke often communicates an impression of sharpness, as if the heart were preternaturally and peculiarly irritated, sometimes an impression of continuous motion, a

* The description here given does not include the common inflammatory action which terminates by suppuration.

feeble and singular kind of labouring of which it is difficult to give a precise idea. Together with this, there are occasionally inordinate palpitations, pantings for breath under exertion, flutterings at the pit of the stomach, with unusual sensations of distress in the epigastric region. The disease, even at its earlier period is characterized by paleness, or absorption of colouring matter from the skin: the lips and gums become pale and bloodless; the countenance assumes a pale, pasty or wax-like appearance; the skin is ordinarily dry, generally smooth and polished; the white of the eye, destitute of red veins, is sometimes of a pearly whiteness, sometimes of a dingy yellow. The countenance, while pale and pasty, is dull and inanimate—statue-like without expression; often puffed and bloated: the bulk of the body, instead of diminishing, usually increases with the progress of the disease.—The duration of this form of malady differs in different subjects, or according to different circumstances of subject. It is soon fatal in some: it extends to months in others; and, where no extra causes concur to aggravate or accelerate the course, it sometimes becomes constitutional and extends even to years.—The fatal termination of the more protracted forms is for the most part effected through watery diarrhea, or by effusion of water into the cellular membrane, &c. producing dropsy—general or local.

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II.

Dissection.

The appearances observed on dissection, more especially of such of the forms as advance by a slow progress, manifest changed structures and preternatural appositions of substance in almost every part of the body. The change is more conspicuous in the heart than in any other part, the appearance impressing the opinion that that organ had been primarily affected, and continued prominently affected beyond all others during the course of the disease. The volume of the heart is sometimes increased to twice or three times its natural size. Its fleshy substance is dry, sometimes so dry as to be in a manner friable—sometimes it is of a brown or pale brick colour. The base of the heart is usually loaded with a great quantity of substance firmer than fat, less firm than cartilage, pellucid in colour, and very much resembling the brawn of pork. The larger of the blood vessels are usually filled with coagulated lymph, differing in density and compaction in different cases; the smaller vessels contain black fluid blood. The muscular flesh is pale and colourless throughout the whole body; the cellular membrane is more or less filled with a peculiar concrete resembling brawn. The coats of the alimentary canal, (stomach and intestines) are thickened—bleached or colourless, converted into an artificial leather-like tube—the sides preternaturally dense. All the interior surfaces are dry,—void of unctuousity or moisture, unless where dropsy has super-

vened in a late stage and apparently terminated life.

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II

CURE.

The cardiac form of fever alluded to in this place has rarely fallen under my observation at its commencement; for it is not endemic in those islands where I principally resided. What I have to suggest on the subject of cure is, therefore, little more than opinion formed from the appearances which present themselves on the dissection of the dead body. I think I may venture to say that we possess the power of arresting diseased actions, in their early stages, in all parts of the organic system by means of abstracting blood from the circulating mass; and further that, when diseased action is arrested, we possess the power, through other means of remedy, of exciting actions which are analogous with those of health, even of maintaining such actions in a salutary course by artificial force. At the commencement of this form of disease, that is, before the new process of what may be termed accretion has taken a constitutional form, the abstraction of blood in large quantity, notwithstanding the pale and bloated aspect of the subject, presents itself as the first remedy and the most important:—it is in fact the base from which all the future proceedings derive their efficiency. After bleeding, an emetic, particularly an emetic of white vitriol, promises to be of benefit; and, after the emetic, the purging tincture of aloes and myrrh, so often alluded to in this sketch

CHAP. II. may be considered as the best of purgatives. All the diets ought to be alkalescent, and all the drinks alkalized: rest and the horizontal position are necessary, even essential to the effecting of a cure. If the foundations of the disease have not been moved by the first abstraction of blood, it is proper that the operation be repeated at a short interval, and that it be then carried to such extent as touches the point in view. Where the form of the disease is intermittent originally, or rendered so by treatment, peruvian bark with large doses of muriate of ammonia, acetated water of ammonia, white vitriol and alum, camphire, nitre, diluting and attenuating fluids, juice of herbs or other beverage, comprehend the means through which a cure may be effected.—The base of cure depends, according to my view of the case, on changes induced upon the condition of the blood through diminution of quantity; the completion of cure and its permanence, on maintaining the change induced through suitable combinations of stimulant and tonic power.

I am disposed to believe that the cardiac form of fever may be arrested, and that health may be restored by the means suggested, if they be applied in time and applied to the full extent; but I am also sensible that, though arrested, the disease is liable to recur at a short interval, and that no means, simply medical, will be effectual in preventing the recurrence, if the subject be permitted to remain in a situation where the form in question belongs to the soil. It is therefore recommended that, as soon as

the progress is checked, the patient be embarked on board of ship for a cruise at sea under suitable regimen and discipline; or, if that be not attainable, that he be removed to another island, or to another district in the same island where the cardiac form rarely appears as original. The means stated promise to be effectual if applied in time: if the course be advanced, they cannot be expected to avail much, or rather to do any thing, without the removal of the subject from the place where the disease arose, and where it prevails locally. With removal, and a judiciously arranged plan of medical treatment, the case is not altogether hopeless; but, until the importance of saving life be calculated by a more enlightened rule than that which now obtains, the expectation of such arrangement is a vain expectation. The medical officer commands nothing beyond the walls of his hospital; and it is easy to be seen that hospital treatment alone does not in the present case, however judiciously adjusted, command the patient's recovery.

From the power which mercury possesses in effecting changes in the existing actions of the system, certain preparations of mercury may be thought to be deserving of trial. Mercury may, I believe, be useful; but it is only as an auxiliary: the radical part of the cure depends on abstraction of blood, change of climate, and medicated diet, viz. such means as are calculated to influence or totally change the condition of the circulating mass.

CHAP.
II.

CASE I.

Barbados, *February 8th, 1814*—A man, of the fourth battalion of the 60th regiment, was admitted into hospital about three months since under a feverish indisposition of no great apparent violence. He was bled to a moderate extent, and treated as a person suffering from a fever of a milder kind. He said he was better, and was thought to be so; but he was not restored to health. The pulse continued hard—bounding and irritated in a peculiar manner. Some blood was again abstracted, and he was somewhat relieved—but the irritative impression, communicated to the finger by the pulse, never disappeared entirely. He continued in the hospital: the feet and legs began to swell; the swelling never was great; the appetite was good; he slept well, and always reported himself to be better. The lips and countenance lost their colour; the skin was dry, smooth and polished; the pulse was irritated at all times—violently irritated under any thing like exercise. He tried a variety of remedies, viz. chalybeates, diuretics, digitalis, cicuta, purgatives—singly or in combination, but without perceptible benefit. The swelling disappeared from the feet and legs: he was thought to be better, when he was seized suddenly with faintness, stupor and oppression. He was not insensible; the aspect was ghastly in an extreme degree:—he died in 18 hours from this attack. The body was *opened*.—No marks of disease on the dura mater,—the veins of the arachnoid coat and pia mater turgid—coagulated lymph effused underneath; water effused in the interstices of the brain, in the ventricles, at the base of the brain, and between the coats of the superior part of the spinal marrow. The heart exceeded the natural size by more than one-half; the substance was thick, firm and solid—without abscess, or appearance of actual inflammation; it was enlarged on the base of the original structure only. Lemon coloured masses of coagulated lymph were found in the cavities and in the larger vessels near the heart. The liver was large, hard and gritty like free-stone—without abscess or purulence in any part.

CASE II.

CHAP.
II.

January 19th, 1814.—A man of the 8th West-India Regiment, African by nation, constitutionally unsound, that is, short winded and troubled with a cough, was brought to the hospital five days since with increased difficulty of breathing, but without any material complaint of pain; the pulse was low—scarcely to be felt; the artery small like a thread; the skin cold without animation: a vein was opened,—the blood did not flow:—nothing that was done gave any relief: he died. *Opened.*—The heart covered with a thick crust like pancake; the pericardium so distended with matter and water as to be in danger of rupture; the lungs diseased,—the structure constitutionally changed in various places to something like amadou or touchwood.

The above is a case of common inflammation and its customary effect, ~~not~~ of the disease here under consideration.

**B. Cardiac Form of Febrile Action—the Course
Retrograde—the Act Liquescent.**

I have described, in a cursory manner, a form of febrile disease which may be termed cardiac progressive or generative, in as much as the production of new matter is implied in the act of the febrile process. I shall now notice, in the same cursory manner, the form termed cardiac retrograde or liquecent, which implies a change in structure, or such abstraction of constituent matter as gradually undermines the power of the heart, and thereby occasions death. The invasion of this form of malady is sometimes sudden, the course rapid, the termination fatal. It is oftener obscure, the progress gradual,

CHAP. II. the termination remote. The naturally fatal tendency of the disease is sometimes arrested by change of circumstances, viz. change of climate or season; and in this manner it is not unfrequently arrested by the supervention of winter in the more northern latitudes. The form is sometimes periodic—generally of the single tertian type; sometimes the remissions and exacerbations are scarcely discernible, at least calculable. The principal characteristic of the disease consists in paleness and sallowness of the countenance, absorption of colouring matter from the lips, gums and cheeks. The tongue is pale—diminished in size, soft and flaccid. The skin is dry, smooth, polished and soft as satin; the flesh is flaccid—soft as wool; the eye is clear—of a pearly whiteness, sometimes of a lurid yellow. Debility is extreme; but it is rare that there is much uneasiness while the party is suffered to remain in one position: an attempt to walk, to accelerate the pace, or to ascend a height produces inconceivable distress. The pulse is always frequent, so frequent under exercise or any thing like exertion that it is scarcely possible to reckon it; while frequent, it is without force or impression—palpitating feebly and irregularly as from excited effort. Respiration is hurried to panting under exertion; it is otherwise calm and easy. Strength fails; the body melts down, sometimes rapidly, sometimes slowly: where the course is slow, dropsy or diarrhea are the more ostensible causes of death.

*Dissection.*CHAP.
II.

Where the disease has been of a protracted course, the principal cavities, viz. thoracic, abdominal or cranial, overflow with watery fluid: where the progress has been rapid, dropsical effusions are less common. The appearance of the heart is that which of all others strikes the most forcibly. It suffers a singular diminution in size and density, sometimes not weighing more than one-third of its natural weight; loose and flaccid as a bag of wool or cotton, and pale as if it had been bleached. The matter which gives colour to the fibre is absorbed, not only from the heart but from every part of the body. The fleshy parts are every where diminished in size—pale and flaccid; the stomach and intestines pale and colourless, as if they had been under a process of artificial bleaching.

CURE.

The first step in the cure (and without which others will be of little avail) consists in removing the diseased subject from the place where the disease arose. The general principle of cure is the same here as in other febrile diseases, viz. change of the existing condition and reproduction of the condition of health: the difficulty lies in the selection and application of the means by which it is effected I much doubt if abstraction of blood will be permitted to rank among remedies in this form of disease. I

CHAP. cannot pretend to prove its utility by experience;
II. — but I do not hesitate to say that, if a case of the
above description were presented to me before it
were altogether hopeless, I should begin the cure
by abstracting blood, provided I had it in my
power to command all the other means which I
judge to be necessary to carry the practical view to
its object. Where bleeding has been premised,
frictions of the skin with stimulating oils, washing
the body with herring brine pickle or with cold
salt water, exercise on horseback or in a suitable
carriage, rigid interdiction from personal exertion,
a cruise at sea, change of air and change of cli-
mate, a medicated diet, viz. alkalescent, stimulant
and savoury—on a low scale as to quantity, the
drinks alkalized, purging tincture of aloes and
myrrh as an occasional purgative, chalybeates, viz.
salt of steel with myrrh, soda and camphire in small
doses and at short intervals, occasional emetics,
particularly emetics of white vitriol, compose the
routine of medical prescriptions. By these, or other
means skilfully adapted to the case, something may
be done, even more than can be done in progressive
form. The principal business is here to add; in
the other, something must be removed before addi-
tion can be made; and to take away and to add,
and to preserve the fabric from radical change and
ruin is, physically and morally, the most difficult
task that man undertakes. But even where the view
is simple, as it comparatively is in the present case,
the attainment of the object will be difficult with all

the aids of human skill and human means. With the circumscribed means of the medical officers of armies, it is next to impossible; and circumstanced as the military medical officer is, little more is in his power than exercise of patience and humanity to the subjects of his care.

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SECTION III.

Febrile Action in the Catarrhal Form.

The cause of fever sometimes manifests its operation upon the membrane which lines the nose, fauces and bronchia, constituting catarrhal fever, which comes, in this manner, to be ranked among the diseases of the thoracic cavity. The symptoms of this form of disease are so commonly known that it would be superfluous to go into historical detail on the present occasion; and, as historical detail is superfluous, I shall only add a very short remark on what relates to cure.—The catarrhal form of fever often begins with more or less of shivering: it is frequently accompanied by fever.

In regard to cure, if the head-ache be severe, the cough sharp and distressing, the rheum from the head and bronchia sharp and thin, particularly if it be withheld under constriction, it is advisable to abstract blood, viz. from one to two pounds; in fact to such quantity that the secretory organs relax, and the condition of the pulse change. When this has been done, and when tension and heat have

Cure.

CHAP. been removed in consequence of bleeding, an emetic of ipecacuanha, but still more certainly and effectively an emetic of white vitriol, cuts off the disease in its beginning, in most cases where it is properly administered.—Two scruples, or one drachm of flowers of sulphur with twenty grains of nitre, made into a bolus with pure honey and given at bed time for three or four successive nights, is generally sufficient to prevent any recurrence of the disease; more particularly if the diet be diminished, if the subject take exercise in the open air during the day, and carefully avoid exposure to cold and damp during the night. The effect is rendered more certain by a solution of zinc and alum, accompanied with occasional doses of acetated water of ammonia.

If the symptoms still continue, notwithstanding the employment of the means now stated, it may be proper to immerse the body in a bath of warm water, to abstract blood from the arm in such quantity as to produce a sensible change in the circumstances of the case, to repeat the emetic, to apply blisters between the shoulders, &c. If the cough be troublesome, the defluxions of phlegm copious and tough, white vitriol and alum in large doses, or sulphur and honey with a certain portion of balsam of capivi made into bolus have often, within my own experience, produced very favourable and sudden changes on the condition of this disease.

CHAPTER III.

Forms of Febrile Action in the Superior or Cranial Cavity.

THE cause of endemic fever manifests its action, not unfrequently, upon the membranes and substance of the brain more prominently than upon other parts, manifesting it so prominently indeed as to constitute a form of fever which I have taken the liberty to call cerebral. The cerebral form of fever is, perhaps, the most important of any that occurs in the animal system on account of its dangers; it is one of difficult discrimination on account of the obscurity of its conditions. It is simple, as it acts on one series of parts, and as the action continues on the same series throughout. It is compound, as it acts at one time upon parts of different series or structure; or as it changes from one series to another at subsequent periods of its course. The act is progressive, as producing, through the operation of the diseased process, a material that is new and foreign; it is constrictive or spasmodic, as suspen-

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III.

Modes of
Cerebral
Fever.

CHAP. III. ding secretory function through irritation connected with force; it is stationary, or stagnant, as the influence which moves the forward act is weak or restrained; and it is retrograde or liquefactive as the tendency of the act disorganizes or dissolves the continuity of living structures. The cerebral fever, as it occurs in the sanguine temperament and acts on the sanguine base, is characterized by vascular action locally excited to intensity, or oppressed and suspended through excess of plethora—the effect suppuration or gangrene: as it occurs on the phlegmatic or lymphous habit, and acts on the lymphous base, it is characterized by torpor and defective animation in all the animal functions during the progressive course—the effect congestion, adhesion and new products: as it occurs in the serous temperament, and acts on the serous base, the character is diversified in a variety of ways, viz. irritative, constrictive, suspensive, irregularly secretive—the termination various, viz. profuse evacuation, or effusion into the cavities.

A. *Cerebral Fever in the Sanguine Temperament.*

The cerebral form of fever connected with the sanguine temperament occurs frequently in dry and hot weather, in barren, rocky and hilly districts of country, especially among the natives of Europe or higher latitudes of North-America soon after their arrival in the West-Indies, particularly among such as are intemperate in eating and drinking, and

careless of exposure to vicissitude of heat and cold. It commences as fevers usually do with more or less of horror and shivering. The attack is sudden for the most part, the symptoms often severe from the commencement. The pulse is ordinarily quick, hard, strong and frequent: the pulsation of the carotid and temporal arteries vibrates with irregular and preternatural force. The pain of the head is sometimes heavy and obscure; it is oftener severe and sharp—sometimes vehement and almost intolerable. The eye is red, hot and painful—often prominent or protruded. The face is flushed—often of a deep crimson. The tongue is generally dry, the thirst great, the urine red and scanty, the body bound—often constipated. The skin is dry, heat preternaturally increased—often ardent. The disease is of a fatal tendency if left to itself, or if feebly opposed by art. It is of a rapid course, the duration rarely exceeding five or six days whether the termination be favourable or fatal. The favourable termination is sometimes effected through hæmorrhage, at least sometimes accompanied by copious hæmorrhage from the nose, sometimes by copious perspiration or other copious contingent evacuation; the fatal crisis is ushered in by coma, convulsion or apoplexy.

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Dissection.

The traces of morbid action, observable in the body after death, are of different kinds according to the constitutional base upon which the cause has

CHAP. III. principally acted. The vessels of the dura mater and superficial parts of the brain exhibit strong marks of what is termed inflammatory action. In most cases, the vessels are numerous, distended with blood, sometimes through the whole superficies, sometimes partially—most commonly near the falx. The surface of the membrane is sometimes suppurative; in some rare instances, secretions of a fluid of an osseous nature, and even pieces of bone appear between the membranes, or float upon the surface of the brain. The blood vessels, as observed, are numerous and for the most part distended with blood; they are even sometimes so much distended that, losing contractibility, they appear gorged, so as to exhibit an appearance of gangrene at various points, more frequently near the falx, and at the joining of the coronal with the sagittal suture than others. The substance of the brain itself, as distended by an undue proportion of red blood, is often unusually firm; the cause of the distention declares itself in the number of red points which start up from the surface where the parts are divided by the dissecting knife. Water is sometimes found in the ventricles in greater than usual quantity, but not often where the dura mater and superficial part of the brain constitute the principal subject of the diseased action. In those forms of cerebral fever which move in periods, and which act on the sanguine base, the vessels are often gorged with blood throughout; sometimes they are ruptured, the brain oppressed generally or locally by effusion of blood or bloody serum.

CURE.

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The cure of all the progressive forms of cerebral fever moves on a common base, viz. arrest of the diseased course by abstraction of blood, and subsequent excitement of a healthy form of action by various means of stimulation suited to the circumstances of the case. The quantity of blood which may be abstracted in this form of disease, without compromising the safety of the patient's life, exceeds a measure which, were my experience of the fact not clearly ascertained, I should not venture to put before the public. Four pounds, taken away at one time, may be considered as moderate bleeding in the more concentrated forms; six have been taken on several occasions, and even seven in some. The practice, so formidable in appearance, implied no danger. It saved life by direct effect; in as much as it arrested the course or subverted the foundations of the disease, and rendered the habit susceptible of the action of other means of remedy which prevented the chances of recurrence.

It is evident to any one who observes what occurs, and who reflects on what he observes, that the cure of the form of cerebral fever now under view turns principally upon abstraction of blood. The opinion is reasonable in theory: it is proved in experience to be founded in truth; and it is further proved that the manner in which the abstraction is made, independently of the quantity abstracted, contributes materially to the success of the

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III. effect. Where the force of the morbid act is principally directed to the exterior membrane and superficies of the brain, a condition cognizable by the attendant symptoms, abstraction of blood from the temporal artery has more effect than abstraction from the veins made in the common manner. But, whether blood be drawn from the arteries or the veins, it is to be drawn by a large orifice and in as short time as possible.—The quantity is moreover to be measured by the effect which arises under the act of abstraction—not by opinion formed under a presumption of what may be right. It is seldom that the end in view is attained by less than three pounds of blood drawn from the veins at one time. Six may be necessary on some occasions; but, as already observed, whatever be the quantity, it is the effect produced which constitutes the rule for judging the measure. The measure may be extended to seven; it may perhaps even be carried farther without compromising the patient's safety. It has amounted to ten, in some few instances within my own experience, in twenty-four hours. Instead of danger at the time, or debility as a consequence of such extraordinary depletion, fainting did not always occur, and the patient in most cases returned to his duty within eight days in full vigour of health. But as it is effect by which, according to the doctrine of this sketch, the measure is to be judged; so the combination of other means with abstraction, viz. immersion of the feet and legs in a tub of warm water while the blood flows from the vein, followed

by affusion of cold water on the head, as soon as the first remission of the symptoms is perceived, contribute materially to a reduction of the otherwise necessary quantity. The disease is arrested with an almost calculable certainty by the means stated, if they be timously applied and efficiently administered. But, though arrested, the chances of recurrence still threaten; and, with a view to their preclusion, it is recommended that the whole of the head be covered with blisters extended down the neck to the interval between the shoulders; that purgatives, viz. purging salts with a certain proportion of emetic tartar, or thirty grains of jalap with five or six of James' powder, be given immediately after the arm is bound up, the operation assisted by plentiful dilution with rice water, barley water, or other agreeable and diluent beverage in which nitre is dissolved in large quantity, the head being raised high while the patient repose in bed, and the air of the apartment being rendered as cool and refreshing as it can be rendered in a tropical climate. If, after the lapse of twelve hours, and after free evacuation of the bowels and full action of the blisters, any remains of pain or uneasiness be still felt, the vein is to be again opened; and, under the flowing of the blood, the feet being immersed in a tub of warm water, cold water, even water artificially cooled by ice or otherwise, is to be poured copiously upon the head, notwithstanding the irritated condition of the scalp from the recent application of the blister:— the disease is dangerous, and it is to be borne in

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CHAP. III. mind that its dangers cannot be averted by feeble means of remedy.

B. *Cerebral Fever in the Lymphous Temperament.*

The cerebral form of fever which occurs under the predominance of the lymphous temperament is more frequent than the preceding; and, while more frequent, it is even more important; in as much as its tendency is not less dangerous, and the estimate of its dangers not so easily made. It may be considered as the endemic of the island of Barbados among the military who form the garrison of that station. It is the most common and, in the drier months of the year, it in a manner absorbs all other forms. In the course of three years, viz. from the year 1812 to 1815, the number of cases of this form of disease which passed through the military hospitals furnished ample materials for history; but the limits of the present work do not permit of much detail; and as the disease is one, however varied in appearance, I shall only notice the extremes, viz. mild and aggravated. The milder form, in as much as it is without urgent symptoms, is for the most part opposed by feeble means; it is thus ordinarily of protracted duration: the aggravated form is severe and soon fatal, unless it be treated at the commencement with almost exampled boldness.

1. The cerebral fever of the milder form comes on with more or less of cold and chilliness. The

chilliness is succeeded by heat, but of no great intensity. The symptoms increase gradually from a mild beginning to the seventh day, intermixed with risings and fallings at given periods, but rarely with such marked aggravation or abatement as deserves or obtains the name of paroxysm and remission. The febrile commotion ordinarily ceases or subsides about the seventh day; and health, in such case, returns by slow degrees. Sometimes, instead of ceasing totally, it only changes form and proceeds through another septenary period, sometimes progressive, sometimes retrograde, but still on what may be termed the humoral base: in others, it changes both form and base, the act being transferred almost entirely from the circulating to the sentient organ—intellectual or locomotive.

The more characteristic symptoms of the early stage, that is, the stage comprehending the first septenary period, consist in a dry skin—pale and deficiently animated, a pale and inexpressive countenance, a pale and dry lip, a tongue frequently red and for the most part clean, at least not foul and incrusted as the tongue usually is in fevers of a common character. Thirst is sometimes great: nausea is not unusual; it is often of a peculiar kind, viz. a desire to vomit without power to effect vomiting. Vomiting, at least severe vomiting with retching, is rare, and, where actual vomiting does take place, it is rarely bilious. Delirious wanderings occur frequently; defective power of recolection is noticeable in most; and, in many, there is

CHAP. III.—total want of sleep during almost the whole duration of the disease.—These, viz. nausea of a peculiar kind, a dry and pale lip, a clean tongue, increased thirst, want of sleep, a sluggish and in expansive pulse, constitute the more constant and striking symptoms of the milder form of this disease during its first septenary period.

Second Course.

If the disease terminate favourably about the seventh day, the healthy action commences; but the progress to recovery is for the most part slow and gradual. On the contrary if, instead of crisis and favourable termination, there be only change of mode, a new form of disease commences and advances with more or less regularity to its own termination. The symptoms are various: sometimes, actively progressive, they move under a form of excited action and terminate by a regular and final crisis; sometimes, stagnant, they strike into the retrograde channel, where life expires under symptoms of general or local inability. The skin then withers; or becomes damp, clammy and greasy, accompanied with want of ability to move, rather than with that species of extreme mobility which does not bear to be moved without fainting, or near approach to it. The mind is without energy or command; delirium, ordinarily so named, is rare: the pulse is small, frequent and obscure, sometimes soft, weak, regular and easily compressed.

2. The commencement of the concentrated form of cerebral fever is similar to that of the mild, except that the attack is generally more sudden and

abrupt, as well as that the symptoms are more violent in degree. Vertigo, blindness, nausea and vomiting are among the first symptoms. The nausea is of a peculiar kind; it is often accompanied with giddiness and unusual sensations in the head. Vomiting, where actual vomiting takes place, is seldom bilious. Coldness—deep and dead coldness of long continuance is common; shivering and shaking are rare. There is generally more or less of confused feeling within the head. The sense of pain is sometimes dull and oppressive—with stupor and inaptitude; it is sometimes intolerable—driving the patient almost to madness; it is rare that it continues in excess after the tumult of invasion is past. The eye is heavy, torpid, fixed and inexpressive, or expressive of irksomeness and discomfort. It sometimes rolls wildly, particularly where delirium is a prominent symptom. The *tunica conjunctiva*, instead of being suffused with red veins, is usually white and pearly, sometimes lurid—without lustre. The general appearance is dull and inanimate, vacant, or idiot like—a condition which increases for the most part as the disease advances towards its termination. The countenance is generally pale, sometimes greasy and lurid, almost always torpid and heavy—statue like without expression. The lips are often pale, and, for the most part, unusually dry; thirst is great, constant, not sated by drinking—often accompanied with smacking of the lips. The tongue is often red, rarely foul. The skin is dry, thick and torpid, sometimes

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III. greasy and damp—not sufficiently animated. The pulse is generally of a febrile frequency, but seldom frequent as a febrile pulse; the stroke of the artery is not quick and energetic, it is drawling, sluggish and without expansion. The heat of the body is rarely high; sometimes it is considerably increased at the *præcordia*; it is seldom higher than natural on the extremities. Delirium, as already observed, is sometimes outrageous at the commencement: this is only a temporary fury, the derangement of the intellect more commonly called delirium is not common as a symptom in the progress of this disease. But, though delirium properly so called be a rare occurrence, the evidences of want of energy of mind are conspicuous; such as give reason to believe that, though the ideas be not actually perverted, they are disturbed, and as it were hampered in their course by some adventitious cause of compression. Nausea is present in almost all stages of the disease; even vomiting occurs occasionally: the nausea is peculiar, different from common nausea—such as words cannot well describe. Where vomiting takes place, the matters ejected are rarely any other than what have been taken down as drink. The body is costive, the intestines torpid—scarcely moved by the strongest purgatives; or, if moved, not effectually evacuated:—this is one of the most striking features of the disease. The urinary secretion is often scanty, sometimes in a manner suspended. Anxiety, distress and sufferings of pain are rare occurrences. Inability and want of power are conspicuous in all

the animal actions; fainting, disposition to faint, or excess of mobility is rarely observed. The patient lies on his back, for the most part in a state of tranquillity, sometimes still as if he were inanimate. Respiration is ordinarily slow, sometimes preternaturally slow and unusually calm. It is not easy to form a precise opinion on the subject of sleep; there is often the appearance of slumber, rarely the reality of sleep. Wandering of intellect or confusion of idea is not unusual for some time previous to death: delirium, even then, is rare as a mode of febrile action.

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The symptoms, now enumerated, are not all the symptoms which appear in this form of disease: they are the most common. On some occasions, tumults in the sentient system, both externally and internally, are conspicuous. viz, spasms, cramps, tetanus, convulsion, delirium of all forms and degrees. The course of the disease is, upon the whole, rapid. The termination, when fatal, rarely extends beyond the seventh day: it often reaches to the fifth; unless among the periodic forms, where convulsions supervene at an early period and close the scene abruptly.

Dissection.

The dura mater rarely shews appearances of what is termed inflammatory action, or it only shews it partially near the falx. The arachnoid coat and pia mater are on the contrary almost always more or

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III.

less inflamed: they have often in fact the appearance of a linen rag that has been dipped in blood, more especially the interior surface. Filaments of coagulated lymph extend in all directions, so as to form adhesions with all the contiguous parts. The choroid plexus is usually a clotted mass in which the traces of organization are scarcely to be discerned: sometimes it is clustered with hydatids. The ventricles are almost always filled with clear water—often greatly distended by it. Besides distension of the ventricles with watery fluid, water frequently occupies the interstices between the coats of the spinal marrow. The substance of the brain itself, where the disease is of a rapid course, is generally more firm and solid than natural, so as to give an idea of artificial agglutination by coagulated lymph. The veins on the surface of the brain are distended with black blood: black blood often trickles out in quantity from the more solid substance as it is cut into slices by the dissecting knife.—Nausea, as already observed, is almost always a symptom of this form of disease; and, as might be expected, dissection of the dead body almost always shews spotted or gangrenous appearances at the cardiac orifice of the stomach.

CURE.

The method of cure rests on one base in both forms—mild or concentrated; the means vary in measure. The concentrated is that at present

under view; for, if the treatment of the concentrated be rightly understood, the management of the milder can scarcely be mistaken. I merely give the outline of the proceeding:—If a person, whose condition manifests signs of the concentrated form of cerebral fever acting on the lymphous base of temperament, be submitted to medical care at an early period, that is, within twelve hours from the time of attack, the first step towards cure consists, according to my view of the case, in immersion of the body in a warm bath of high temperature, the activity of the heat increased by the addition of ammonia, or *eau de Cologne*. After immersion for eight or ten minutes in a simple or medicated bath, a vein is to be opened in one or in both arms—the jugular in preference to the arm, if it can be done conveniently. When the vein is opened, the blood is to be allowed to flow until a decided change be perceived in the circumstances of the disease, that is, until the blood change to a brighter colour, until the pulse become open, free and expanded, the stroke quick and energetic; or until fainting supervene. If fainting supervene, or if strong indications of fainting manifest themselves, the patient is to be removed from the bathing vessel, placed upon a couch—the head somewhat elevated, the body wiped dry, the face and breast sprinkled with cold water, aromatic spirits, vinegar and water, or other means calculated to forward recovery from the fainting state. When the fainting or disposition to faint is removed, the condition of the patient is to

CHAP. III. be re-examined with care; and, if it then appear that the foundations of the disease are still unmoved, the vein is to be again opened, the blood allowed to flow, or solicited to flow until the change desired be perfectly effected: When evidence of that change is satisfactorily established, blisters are to be applied to the temples and nape of the neck, infusion of senna with a proportion of prepared kali and acetated water of ammonia; or jalap, with calomel and James' powder, is to be given as purgative, the operation forwarded by copious dilution with alkalized beverage.—Large doses of acetated water of ammonia, muriate of ammonia, nitre, camphire and frictions of the body, with hot olive oil and ammonia, rank among accessory assistances in the case described.

If the view, the outline of which is here sketched, be executed diligently under a full comprehension of the principle which gives effect to the medical act, a calculation may be made with some confidence on the safety of the patient's life, provided the case be submitted to treatment at an early period. If the progress be advanced, though the outline of the proceeding does not change, the circumstances of the condition are different and require more or less of modified application; and, even with all the modification that can be made, no promise can be confidently given of good effect. The base of cure consists, according to my own opinion, in abstracting blood from the veins to the greatest possible extent, even at late stages; in stimulating ge-

nerally and locally, after the abstraction and under it, through the infusion of heat into the system by various external and internal means; and finally, by attenuating the mass of the circulating fluid by diffusible, alkalescent and diluent drinks: for, in so far as opinion can be formed from the appearances that present on dissection, the immediate cause of death depends, in the more pure and concentrated form, on agglutination of the brain by effusion of coagulated lymph, similar to the agglutinations which sometimes take place in the lungs and render that organ unfit for the purposes of respiration.

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C. *Cerebral Fever in the Serous Temperament.*

Besides the forms of cerebral fever which occur under the predominance of the sanguine or lymphous base of temperament, a cerebral form of disease, the action of which is principally manifested on vessels of serous secretion, presents itself on numerous occasions, more particularly in fevers of contagious origin, or in such, as acting primarily on the gastric system, suffer a transfer of their action to the cranial cavity at a late period of the course. The commencement of this form of fever does not appear to be distinguished by any very peculiar characteristic. It begins generally with more or less of chilliness followed by heat. The heat is ordinarily sharp and caustic in kind. The pulse is frequent, often small, and generally quick. The pain of the head is frequently severe, sharp or

CHAP. IIRKSOME. The skin is generally dry—often harsh: the tongue is dry and rough in most cases: thirst is great, sometimes excessive—with smacking of the lips: nausea is common, vomiting not rare: the body is costive, the bowels sometimes obstinately locked as in colic; sometimes loose—the stools watery, ineffectual of relief: the urinary secretion is irregular—sometimes in a manner suppressed. Sleep, where it does occur, is rarely sound; it is often altogether wanting for several days: delirium is not unusual; it is of various kinds and in various degrees of intensity.

The disease, formed on the base now given, proceeds for five days, often for seven, with risings and fallings of more or less distinctness at diurnal periods, but seldom so distinct as to deserve the name of paroxysm and remission. About the fifth day, oftener about the seventh, signs of favourable crisis, or the beginnings of fatal subsidence become manifest. The eye and countenance often assume a dingy hue in the progress of the disease; they even become more or less yellow. The skin sometimes continues dry, hot and parched throughout; sometimes it is damp, cool and greasy towards the latter periods:—the mind is usually irritable, exclusive of delirium. Instead of the torpor, which in a manner characterizes the form last described, anxiety and restlessness are conspicuous in the present; and, though there be often inability to move, there is less of that excessive mobility which occasions fainting with change of posture than in many others.

The disease proceeds, and, as already observed, sometimes terminates finally or completes its circle about the seventh day. It sometimes only subsides temporarily at that period: it recurs in a new form, and often on a new base on the seventh or eighth. It proceeds in its new course with more or less variation, terminates favourably or fatally about the fourteenth day; or, changing form, it proceeds through another, or even through several septenary periods with uncertain final issue—frequently with an unfortunate one. Death is sometimes sudden, viz. by convulsion or coma; sometimes gradual—by sinking or loss of power:—the habit shrinks and withers, or it melts down by colliquation.

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Dissection.

The substance of the brain is sometimes unusually dry, its vessels constricted and its customary secretions in a manner suspended. The cortical part, while dry, often has an appearance as if it were withered—sometimes flaccid and sometimes soft or melted down; the ventricles in such case are dry, the interior membranes shrivelled. In others, the substance of the brain is moist and turgescent. Serum of a dirty yellow colour is then frequently effused into the ventricles; it also appears under the membranes, at the base of the brain and between the coats of the spinal marrow:—where the quantity of the serum effused is considerable, shreds of coagulated albumen often float in it.

CURE.

The cure rests on the same base as in the preceding, the modifications are different; the power of remedy is of more dependence. If means be applied in time; and if they be judiciously directed, the medical art has power on most occasions to effect a favourable termination. The temperature of the warm bath, instead of being high as in the preceding, may be considered as sufficiently high at 94 of Fahrenheit's thermometer. Abstraction of blood is the cardinal remedy. Fainting occurs more readily here than in subjects of the lymphous temperament; and, on this account, the whole quantity of blood that may be necessary for cure can seldom be taken at one time. The good effects of emetics, of diaphoretics, and even of blisters, as acting impressively on the system of serous secretions, are more conspicuous than in the preceding: opiates appear also to be of more benefit. They not only allay irritations, but they tend to relax the constrictions which, as suppressing the usual secretions, constitute the main feature of the disease.

D. *Cerebral Form of Fever as manifested on the Functions of the Sentient System.*

Besides the preceding forms of cerebral fever, the leading action of which is manifested in the circulating system, whether on the sanguine, lymphous or serous base of temperament, there some-

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times occur commotions of an unusual kind in the function of the sentient system, arising from the influence of a febrile cause and often destroying life, without leaving behind them other than obscure traces of morbid action on the structure of the dead body; even sometimes none that are discernible. It happens occasionally that the primary action of a febrile cause is exerted exclusively on the functions of the sentient system—animal or intellectual. It happens often that the action is transferred, at later periods, from the more usual channels of febrile action to the more direct instruments of sense—intellectual or locomotive. This is not uncommon in the gastric form of fever, and it is still more usual in the personally contagious.—Where the action of the disease is transferred to the sentient system exclusively, the morbid vascular commotion frequently ceases, or diminishes: the pulses of the heart and arteries resume their natural order in many cases; in others, they continue accelerated, even preternaturally irritated and irregular—small and inexpressive. The heat is often natural—sometimes it is below the standard of health. The tongue is often clean; the thirst moderate; the appetite for food like the appetite of a person in health; the function of the bowels and the secretion of urine often without fault. The whole force of the morbid cause is here exerted on the function of intellect, sometimes by excitement resembling insanity, sometimes by depression, despondence, or melancholy. The derangement sometimes continues for days;

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sometimes it declines after a few hours: but declines to return after an interval, as if its existence depended on a periodic cause. It sometimes terminates favourably, sometimes fatally. The favourable termination is marked, in some cases, by cessation simply: in others, by quiet and sound sleep, the fatal termination is sometimes ushered in by convulsion: death sometimes approaches silently, so as to take place without tumult. Besides the transfer of morbid action to the intellectual function now alluded to, the instruments of locomotion are sometimes affected almost exclusively of the other organs of the system. In this manner, there are tremors, startings, spasms, and even convulsions; in others, extreme weakness, inability to move, or to bear to be moved without fainting, or disposition to faint:—this occurs without mark of febrile action, either periodic or continual.

Dissection.

The traces of morbid action observable in dissection of the dead body are, for the most part, very obscure in such cases as shew prominent action in the intellectual organ only: the cause of death, though not independent of derangement in organic structure, is then of such a subtle nature as rarely to leave impressions that are visible to ordinary observation.

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The cure of this form of febrile action, like the cure of all other febrile diseases, depends upon the just application of a forcible impression, capable of arresting the existing action, followed by means calculated to excite action analogous with that of health. Such changes are, or may be effected by acting through the medium of the circulating system. They are oftener attempted to be effected through means which make direct impression on the moving power, particularly by the alternate and sudden application of warm and cold water—by affusion or by immersion. They are sometimes also effected by opium, or by wine, so administered and so measured as to impress their own action with a force sufficient to supersede the action of the existing disease. Warm fomentations, and frictions with oil, soothe and allay irritations: blisters, by exciting counter irritation, produce a new movement; and thereby act beneficially in this form of disease.—The means now stated are useful, and, on many occasions, of decided benefit.—Ten or twelve grains of pure and recent cob-web, I consider as of more dependence in allaying irritations, whether corporeal or mental, than any means we at present possess. Its power is far beyond that of opium in producing tranquillity; and it is farther valuable, as it does not disguise the circumstances of the case.

E. *Cerebral Fever in Periodic Form.*

Besides the forms described in the preceding pages, cerebral fever appears not unfrequently to move in periods, most commonly to follow the single tertian type. The disease occurs frequently in this form in temperaments of the lymphous base: it occurs also in the gangrenous, whether that be produced by epidemic or artificial causes. The invasion is usually sudden, the characteristic symptoms giddiness, tremors, agitations, delirium—violent even to fury, oppression, stupor and inability. The pulse is ordinarily irregular, irritated; frequent, or slow according to circumstances. The countenance is sometimes flushed, sometimes pale. The eye is prominent or sunk—agitated and wild, or hollow and ghastly. The violence subsides, or the depressed power develops in a given time, generally in twelve or fourteen hours: tremors, wildness or depression of countenance, and such other signs as give suspicion of the treachery of the disease are still discernible where the case is closely inspected. At a certain period, generally sooner than the regular hour of recurrence, the above described symptoms return, sometimes of aggravated force, sometimes of nearly the original intensity. They sometimes pass rapidly into convulsion, followed by stupor and, ordinarily, by death: sometimes they preserve the original form; and, after a certain duration, subside in another imperfect or suspicious

intermission. The paroxysm recurs again, often before the regular time. It sometimes passes rapidly into convulsion, which frequently terminates in death; sometimes, the convulsion subsiding, another form of action ensues, and life is ultimately saved. The fatal termination sometimes occurs in the second paroxysm or third day, often on the third paroxysm and fifth day; and sometimes not for ten days or a fortnight. Any one may conjecture: no one can pretend to calculate the result; for it is not precisely within the rules of organic action.

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The form, now described, is a form of violence strongly disposed to pass into convulsion; and, from convulsion, to terminate in death. Besides this, a form of fever frequently occurs, where delirium or derangement of intellect is the prominent symptom throughout; sometimes with excitement and various forms of aberration analogous to insanity, sometimes with depression, despondence, even with stupor, which invades and recedes at certain periods; and which, when it finally disappears, leaves the patient free from disease, except with sensations of unusual weakness.

Dissection.

The brain is the organ upon which the force of the disease is principally exerted, but the traces of diseased action are not always visible in its structure. In the more violent cases under a malignant or gangrenous constitution epidemic or artificial,

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III. particularly where the scene is closed by an apparent fit of apoplexy, congestions of blood are visible in the whole of the venous system within the head, more especially in the sinous veins. Sometimes, besides general turgidness and distention, blood, effused from ruptured vessels, covers the surface of the whole, or of part of the brain. In the phlegmatic habit, instead of turgidness and stagnation of red blood, there is often effusion of water to great extent in the ventricles, at the base of the brain, even between the coats of the spinal marrow:—marks of inflammation—adhesive or suppurative, are rarely visible. In the serous temperament, coloured serum is effused in great quantity: sometimes nothing is observed.—It is rare that traces of derangement are discovered in the structure of parts, where the intellectual function has been disordered without violence or agitation approaching to convulsion; if they occur, they are contingent, viz. the effect of contingent change in the circumstances of the morbid act.

CURE.

The most suitable means for the cure of the fevers just now described are such as moderate, or arrest the course of the violent actions which threaten danger to organic structure, or which act preventatively of the recurrence of pernicious actions which have been previously arrested. In prosecution of this view, it is recommended that, in

the aggravated conditions alluded to, the head be shaved, as soon as the patient is submitted to medical care, that the body be immersed in a warm bath of higher or lower temperature according to relative circumstances, that a vein be opened in the arm, and blood allowed to flow, or encouraged to flow until a visible change be produced in the conditions of the disease, viz. until the violent irritations be moderated or overcome, or until torpor and oppression diminish or disappear. It is preferable to open the jugular vein, or the temporal artery on many occasions; but, as this cannot always be done without considerable trouble and inconvenience, it is not ordinarily resorted to. When the proper measures have been taken, and when signs of a commencing change become visible, cold water is to be poured upon the head; while blood still flows from the vein. When the change in contemplation is effected, the arm being bound up, the patient is to be allowed to remain for half an hour or more in the bath after all the processes of discipline here alluded to are finished. When a state of comparative calmness and tranquillity is produced, the subject is to be removed from the bath, disposed in bed, the body rubbed dry, the head covered with a blister extending down the neck to the interval between the shoulders, a purgative, viz. jalap with calomel and James' powder, or infusion of senna with tartarized antimony, given immediately, its operation forwarded by plentiful dilution with alkalinized beverage and large doses of acetated water of

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ammonia. Nitre, camphire, occasionally ammonia and even opium may be given at intervals, with acetated water of ammonia, or James' powder: they ought to be given in quantity sufficient to maintain activity of circulation in the extreme surface, and more particularly to excite the energy of the functionary office of the brain. Where irritation and violent action have been subdued, or when torpor has been removed by the above or other more suitable means of remedy, the great point of cure turns upon the prevention of recurrence. Two ounces of peruvian bark, one ounce of powder of valerian, half an ounce of flowers of sulphur, two drachms of salt of wormwood and four grains of emetic tartar, formed into an electuary and given to the quantity of two drachms every two hours during the interval, blisters being applied to the wrists about six or seven hours before the paroxysm is expected to return, have appeared, in my own experience, to be effectual in most cases in effecting this purpose. But, if notwithstanding the power of the electuary, there still exist signs of despondence, or disposition to tremor; opium, and even wine in quantity sufficient to induce a certain degree of artificial impression, are principal among remedies; —they may be administered in most cases with advantage. Immersion in the warm bath, at the first feeling of indisposition, is another of the means which promises security against untoward accidents. If the symptoms be violent at the recurrence, a vein is to be opened in the arm; and, while the body is

under immersion, blood is to be abstracted to such quantity as may be deemed safe and useful. The impression to be made in the present instance must evidently be a strong one. Where irritation is violent, opium may be given to great extent with safety, viz. the tincture of opium to one hundred or one hundred and fifty drops.—The main effort in the curative view must be here directed to avert the force of the disease from the head by external irritation, or other form of diversion; and further to render the sensitive organ little sensible to its impression, a purpose effected artificially by exciting actions of a nature opposite to those of the disease. Where the morbid act is chiefly manifested on the intellectual function, the dangers, though apparently threatening, are comparatively small:—opium, and, still more decidedly, a bolus of twelve or fourteen grains of pure cob-web is often sovereign.

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F. *Cerebral Fever—the Act Retrograde or Liquescent.*

Cerebral fevers are different in kind as moving under forms of progressive action. The symptoms intermix, or change occasionally; the disease thus appears different; the cure is notwithstanding under the direction of one general rule. The fatal tendencies of the progressive forms may be averted with a considerable degree of certainty, if the proper remedy be applied at an early period; that is, before organic structure be actually violated. The salutary

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~~~~~ tendency is moved with difficulty and less certainty in the retrograde. That form occurs in malignant constitutions of atmosphere from the operation of a cause that cannot be ascertained; it occurs occasionally in impure air, artificially rendered so by accumulation of human beings in unwholesome quarters, more particularly among sick persons who are crowded together in damp and ill-ventilated hospitals. It is thus a common and fatal form of relapse of contagious or other fevers in military hospitals; so fatal as to produce on many occasions an appalling mortality. If the cause of the disease act on the sanguine base, the countenance is usually dark and grim as in sea scurvy; if on the serous, it is usually dry and withered as the leaf of a vegetable that is touched by frost or blight. The former is more common in the periodic; the latter in the continued, and particularly in such as are connected in their origin with a cause of contagion.

### *Dissection.*

The more striking appearances, observed in the dead body of the first, consist in black uncoagulated blood stagnated in the sinuses and larger veins within the cavity of the cranium; of the second, in a dry, withered, flaccid and inelastic state of the brain itself.

## CURE.

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The cure of the retrograde form of cerebral fever is even more difficult than that of the progressive. It consists in all its latitude of a double process, viz. abstraction of blood from the veins, and, under abstraction, suitable stimulation of the moving power, viz. such as is calculated to excite the natural or healthy action of the system. In the progressive form of action, blood might be drawn with safety to a prodigious extent; and, when that was done, healthy action sometimes arose spontaneously—without the necessity of artificial stimulation. Here blood cannot be safely abstracted from the veins, except in small quantity at one time, and stimulation cannot be applied, except in a measured degree and with attentive consideration of the existing condition of the subject. It is difficult, or rather impossible to deliver precise rules of management on this head. The cure can only be conducted properly by a person who thoroughly comprehends the principle, and who superintends every step of the process with his own eye. Of the means which stimulate to new action, after the condition of the organ has been rendered susceptible by abstraction of blood, sprinkling of the body with cold water, gestation in a convenient vehicle in the open air, and internal cordials of small power, are safe means, and often effectual ones in giving impulse to progressive movement. When the progressive act has been excited, and when it has made some advances in progress, its steps will be

CHAP. III. accelerated, and the effect rendered more sure by farther abstractions of blood made with caution, by aspersions of cold water and more active modes of gestation than were warrantable in the first trial. The whole of the proceeding is difficult, the management only safely conducted under the direct inspection of the physician himself. The change contemplated consists in effecting a change to the progressive form of action ; and, as that can only be primarily moved by causes which stimulate, solicit and agitate, so it only can be maintained subsequently by the application of causes which give exercise to the natural action of those parts on which the functions of health depend.

The cases which are given in this place, as illustrative of the history of the disease and the mode of cure, are selected from such as terminated fatally ; for, as it is from such only that an idea can be formed of the ravages which diseased action commits on organic structure, they are instructive, though they do not flatter the vanity of the physician like those that terminate favourably. From the subjoined histories, the reader will learn that the means employed, though apparently strong means, were not strong enough, were not employed soon enough, or were not employed with the combinations which were necessary to maintain effects which were temporarily gained. They thus failed, as applied to a disease not remediable at the time, as not properly measured to the strength of the case, or as not supported by such applications as assured the ground which had been gained by the first steps of the process. Hence the effect was void through fault in the execution. The truth of the principle is not invalidated by the failure; on the contrary, it is confirmed, by the lights gained from dissection, that it was radically founded in truth.

## CASE I.

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Barbados, *July 26th, 1814*.—E——n, York Rangers, admitted into hospital on the *23rd July*, attacked the preceding evening with slight cold and shivering. There was no violent symptom of disease; no material head-ache or vomiting. A sense of dulness and inability, irksome sensations of pain in the limbs, with a lurid aspect, were the most conspicuous symptoms; the pulse was defective in energy—and not accelerated in any remarkable degree. Evening,—he vomits every thing he takes, and throws up more than he takes down; the skin is dry—somewhat yellow or dingy—not hot; the pulse is frequent—small without expansion; the eye is dull—the white marcid or dusky; no decided pain of the head—a sense of dull oppression; the bowels torpid. Purgatives, bath, blisters and diaphoretics constituted the chief prescriptions;—no blood abstracted, the case having been considered a slight one. *27th*,—he slept a little; the vomiting is somewhat abated; the pulse is less frequent—not expansive; the lips are dry; the skin constricted; no marked head-ache; dingy yellowness the same: bowels opened by purging tincture of aloes and myrrh; camph., ammon., opium in bolus; friction with mercurial ointment. Evening,—not worse; skin soft; pulse regular—not weak; little vomiting; eye muddy. *28th*,—not better; free from pain. Evening,—pulse feeble and irregular; skin clammy and damp; lips dry; tongue moist; no pain; uncomfortable in himself; head not clear. *29th*,—he vomited much in the night, had several evacuations by stool; the pulse small—hesitating, intermitting; yellowness increases; heat nearly natural. Evening,—the pulse is regular and rather firm; he has vomited two or three times since morning; the head is carried; he catches at flies as for amusement; the tongue is dry. *30th*,—he wandered in the night—now intelligent, in so far as to answer a question,—not clear; the pulse is irregular at times, distinct at others; the countenance is lurid and yellow. Evening,—the head is carried; there is no vomiting; he takes nourishment,—at least arrow-root with wine. *31st*,—he died

CHAP. in the night: the body *opened*.—The dura mater shewed no signs of inflammation in its open surface; there were strong and extensive adhesions at the falx on both sides. The arachnoid coat and pia mater were inflamed and thickened; the inner surface of the pia mater red as a sheet of blood—with considerable effusion of coagulated lymph underneath; the ventricles and interstices between the lobes of the brain were deluged with water.

#### III. CASE II.

Barbados, September 20th, 1814.—A——n, York Rangers, admitted into hospital to-day with symptoms of fever, chiefly characterized by numbness and want of power of the limbs, want of sleep, &c. Bled to the extent of two pounds—somewhat easier; skin open at the time; body opened by medicine. There is no marked pain of the head; no vomiting; thirst is considerable; the lips are dry; the pulse very frequent. 21st,—the pulse slower, still febrile—small and in expansive; the lips dry; the skin dry, thick and torpid; no complaint of pain; there is irksomeness and inability; little or no sleep. Evening,—no complaint of pain; the lips dry; the skin constricted, or bedewed with perspiration—clammy and partial; no crisis, nor tendency to it. 22nd,—watchfulness; tongue dry; lips dry; countenance inanimate. Evening,—no better; head blistered; bowels torpid; pulse very frequent and small; the skin warm; the lips dry; the tongue whitish; no sleep; the countenance unpleasant—giving no promise of safety. 23rd,—he died in the morning: the body *opened*.—The blood vessels of the pia mater numerous and much distended,—lymph effused under it; adhesions and long filaments of coagulated lymph near the falx. Numerous red vessels upon the surface of the brain itself,—the surface frothy—its colour brown, the aspect unusual; a small piece of bone, attached to the pia mater, presented itself at the *crista galli*; numerous red points started out as the brain was divided by the dissecting knife; there was more than the usual quantity of water in the ventricles; the choroid plexus was knotty and of a purple colour. The liver

was large and hard, as if it had been boiled; in cutting into it, much blood—black like tar, flowed out; the bile in the gall bladder was black as tar; on the inside of the stomach there were numerous patches—black as if gangrened without marks of preceding inflammation; the pancreas was diseased—adherent to the contiguous parts and partially suppurated.

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### CASE III.

Barbados, *October 28th, 1814.*—B—, York Rangers, had been unwell for two days, and went on guard yesterday morning with head-ache and considerable indisposition. He was a hard drinker, and in other respects a profligate man. He felt chilliness and severe head-ache, with other common symptoms of fever, about noon. He was relieved from guard and brought to the hospital about two o'clock. Bled to three pounds—the head-ache relieved, not removed; the pulse frequent, hard, and sharp. Evening,—bled to the amount of two pounds; pain of the head relieved; the pulse still frequent—not full, the stroke sharp; the skin hot and dry; no crisis, or sign of approaching crisis. *29th*,—slept in the night; sweated after the bath, but not freely; the pulse is still febrile, sharp—not expansive; the skin dry and rather hot; thirst moderate; no pain of the head; there is pain or uneasiness in the limbs, particularly from the knees downwards. Evening,—bled to the amount of twenty-four ounces; no feeling of pain; professes himself to be light and easy; the pulse still frequent; the heat natural; the skin dry, but not parched; the eye clear; the tongue whitish; thirst urgent; appetite wanting; bowels open; no crisis. *30th*,—slept a good deal; does not complain of pain; thirst diminished; tongue moist; pulse still febrile—the frequency diminished; the skin dry, but not constricted; heat about the natural standard. Evening,—some return of appetite; the tongue moist; pulse febrile, but open; skin moist; some appearances of recovery. *31st*,—says he is better; the pulse is more frequent than it was yesterday; the skin is hot; the tongue foul; he is reported to have raved a little in the night; the

CHAP. eye is now clear; he does not complain of pain or uneasiness.

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Evening,—vomited bile in the forenoon, after having taken salts; slept in the forenoon; eat soup and chicken with seeming relish; thirst not materially increased; the tongue moist—whitish, and not as the usual appearance of the tongue after fever; the pulse 120 in the minute—distinct and regular; no complaint of pain. *November 1st*,—very uneasy in the evening, (viz. eight o'clock), pain of the head, hurried breathing, anxiety and distress. Bled to the amount of two pounds: antimony, nitre and digitalis; blister to the head. The skin now cool; the pulse still frequent, above 100 strokes in the minute—regular, but not expansive; the eye clear; the skin soft; respiration easy; the heat natural; the tongue white and rather dry; some sleep in the night; no complaint of pain. Evening,—an emetic was given in the forenoon,—some yellow bile ejected; lighter and easier; the skin cool,—no relaxation; the pulse frequent, but regular; took soup with relish. *2nd*.—rambled in the night; wanted to rise up; he is now sensible, but flies off at times; complains of general weakness and want of power; the abdomen inflated; tongue moist; thirst moderate; no vomiting; the eye and countenance less animated; the skin dry, but not parched; the lips dry; the pulse 120 in the minute—regular, but not expanded;—no indication of crisis. Evening,—two evacuations by stool; the abdomen less tense; the tongue moist; the pulse more expanded and less frequent; the mind not clear; the eye less animated; quivering in the muscles about the lips and nose; respiration hurried at times. *3rd*,—rambled during the fore part of the night, slept quietly in the latter; the pulse very frequent: the respiration hurried; cough at times troublesome; the pulse very frequent and small—in one arm not perceptible; torpor and want of energy in all the functions, particularly since yesterday. Evening,—died about noon: the body *opened*.—Marks of subsided inflammation in the brain; several protrusions from the brain into the skull, so as to penetrate to the outer table; strong adhesions and numerous cords of new formation at the falx, but of such appearance as if the inflammatory state had been past. Effusion of serum under the

pia mater adhered in many places to the substance of the brain; the blood vessels of the brain not turgid; water in the lateral ventricles (which were unusually large) in more than the natural quantity; much water at the base of the brain and about the *medulla oblongata*. The thoracic and abdominal viscera sound.

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## CASE IV.

Barbados,—November 14th, 1814.—C——n, York Rangers, had been absent from his quarter for one night, two or three days before he came upon the sick list;—he then acknowledged three days of previous indisposition. He complained of purging and griping, severe pain with bloody evacuations. Bled to the amount of three pounds; warm bath; calomel, opium and ipecacuanha every six hours. 15th,—the pains relieved; five or six evacuations in the night; the stools mucous, watery—not feculent—without pain; the pulse very frequent and very small; the countenance of a greasy appearance—sunk and depressed; the tongue foul, rough and dry; thirst urgent. Evening,—purging somewhat abated; thirst continues; pulse very frequent, and so very small that there is difficulty in counting it; much nausea—apparently from the ipecacuanha which forms a part of his medicine; the skin is moist, but clammy; the countenance dull and unsatisfactory; says he is better. 16th,—slept in the night, and reports himself to be better; the countenance somewhat more animated; the eye clear; the tongue rough and dry; thirst continues; purging diminished; no complaint of pain; the pulse remarkably small and frequent. Camphorated mixture, laudanum and æther; frictions with camphorated oil and spirits of turpentine to the abdomen and extremities; calomel, opium and ipecacuanha continued. Evening,—reports himself to be better; the tongue rather moist; the eye clear; the countenance rather more animated; the evacuations by stool bloody mucus—some of them more than others; no pain or tenesmus; no anxiety or distress; tranquil; respiration easy; thirst continues; the pulse still very small and very frequent, but somewhat more distinct than it was last night; the skin

CHAP. III. warm—moist ; the moisture not fluid ; sleeps at intervals ; takes nourishment, viz. soup, arrow-root, and porter, which he relishes more than wine. 17th,—the eye less animated ; the countenance more sunk ; he still reports himself to be well, the only symptom of mental alienation that can be discovered in his words or actions ; tongue rough ; thirst very urgent ; no sleep ; has vomited several times ; the evacuations by stool thin—with-out feculence,—sometimes the colour of milk chocolate ; the pulse frequent and small—scarcely to be counted ; the skin cold and clammy. Died at five in the morning : the body *opened*.—Adhesions at both sides of the falx remarkably strong and considerably extended ; effusions of lymph under the pia mater ; the pia mater itself much inflamed and thickened as an effect of inflammation ; the brain studded with red points after the dissecting knife ; a small quantity of water in the lateral ventricles ; a prodigious quantity at the base of the brain ;—the blood vessels of the lungs were turgid, though the substance was sound ; the heart was small—coagulated lymph in the interior ; the stomach not inflamed,—the inner coat of an azure colour—in some places more than others,—the colouring matter under the surface, not adhering to it ; the liver was sound ; the colon inflated,—the inner coat abraded in two or three places,—the abrasions not extensive : the small intestines of a dark colour, in one or two places tending to gangrene.

## CASE V.

Barbados, October 26th, 1814.—A——n, York Rangers, had been indisposed with head-ache, but bore up against it in hopes it would go off,—went on guard and was seized about noon with excessive pain of the head, giddiness and insensibility, loss of power of the limbs ; brought to the hospital about two o'clock : the head-ache severe ; the limbs powerless ; sickness at stomach ; thirst excessive. Bled to the amount of four pounds : head shaved and blistered ; bathed in the warm bath ; purging mixture. The pulse hard before he was bled ; the blood flowed freely—no faintness or disposition to faint, and not much

relief. Six in the evening,—the head-ache continues—the pain chiefly in the forehead; the eye seems full—the coats not inflamed; powerless in his limbs; thirst great; tongue not foul; lips dry; skin dry; pulse frequent and irregular; one stool from the purging mixture; heat not above natural; blood buffy and cupped. 27th,—no sleep; the skin dry and parched; several evacuations by stool in the course of the night; head-ache continues—chiefly at the forehead; pulse strong, hard and frequent—not full; heat above natural; thirst urgent; lips dry; tongue rather rough—not foul. Bled to the amount of two pounds; the pulse immediately relaxed—soft and slow; he seemed faint, yawned frequently; a copious evacuation by stool after the arm was bound up; perspiration general. Evening,—has not slept; appears to be more animated; the lips moist; the thirst abated; perspiration general; the pulse still frequent, but regular and soft; head-ache scarcely felt; the limbs still powerless, but less than they were. 28th,—slept five hours in the night quietly and calmly; no head-ache; some pain in the calves of the legs, but less numbedness; eye and countenance animated; lips rather pale; skin soft, moist and warm; pulse febrile, but comparatively regular and open; tongue whitish—moist; desire for nourishment. 29th,—slept well; no pain; skin soft and moist; eye and countenance cheerful; pulse open and free. Evening,—continues to improve; relish for food. 30th,—convalescent,—walks about the ward and gallery;—recovered.

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## CASE VI.

Barbados, *October 26th, 1813.*—Finlay, R. Artillery, had been in hospital for some time on account of a sore on the leg. The sore was healed, and he was discharged to his barrack; but had not entered on duty before he was brought back, viz. on the evening of the 25th, complaining of most excruciating pains and spasms in his limbs, and in all the muscles of the back from the head downwards—of such form and intensity as to resemble tetanus, accompanied with peculiar sensations of cold, different

CHAP. from the cold of intermittents—deep and continued, and so excessive in degree that he did not find comfort from a bath considerably above 100 degrees of Fahrenheit's thermometer. The heart fluttered, its action interrupted; the pulse irregular:—æther and laudanum in large dose; brandy and water. Evening,—somewhat easier; spasms and pains of the hands and feet; confusion in the head and a sense of soreness all over the body still felt; the pulse regular; perspiration copious, but not fluid; æther and laudanum repeated; porter; brandy and water. 27th,—slept the greater part of the night; the body open; no vomiting; pulse rather irritated: bark, sulphur and valerian to be given in large doses every two hours. Evening,—he was seized with spasms between eleven and twelve o'clock—the spasms of great violence; unusual sensations at heart; severe cramps in the limbs; excruciating tenesmus; twisting of the guts; suppression of urine; expresses a conviction that he must die; æther and laudanum. Two o'clock,—perspires, the perspiration copious, but clammy and as if extorted by agony of suffering; vomits sometimes; spits often, and lays hold of his tongue as if to remove something from it that is nasty and intolerable in taste; the head confused; the manner peculiar; the form of excitement unusual; seized about four in the afternoon with strong spasms, and died in an instant. *The body opened.*—The dura mater shewed no marks of disease, except at the falk where there were some adhesions, but of no great extent: the pia mater was much inflamed and greatly thickened; effusion of watery fluid underneath. The ventricles contained more than the usual quantity of fluid, and a considerable quantity presented itself at the base of the brain. The interior of the stomach, particularly near the cardiac orifice, was very much inflamed, red, streaked, and speckled; there was no unusual quantity of mucus, and no thickening or separation of the villosus coat; the intestinal canal was contracted in some places; the bladder of urine was distended; the gall bladder was full of yellow bile; the heart was flaccid—flabby as a piece of common flesh.

## CASE VII.

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Barbados, *December 12th, 1814*.—A man of the Sappers and Miners, cook to the company, was at parade in the evening and went to bed at the usual hour in the usual manner. He broke out in the night so outrageously that, being supposed to be drunk, he was carried to the guard-house instead of the hospital. The madness not having abated, as it ought to have done had it proceeded from intoxication, he was brought to the hospital about seven in the morning. He was then furious; the eye was red; he struggled with violence; swore, and prayed by turns; complained of something at his heart. He was bled to the extent of four pounds and bathed in the tepid bath. The fury was somewhat moderated in consequence; the skin was warm; the heat febrile; the pulse small and irregular. In half an hour after he was removed from the bath, the fury returned; he foamed at the mouth, struggled, blasphemed, snapped as if he would bite; went to convulsion and died about ten o'clock.

*Opened*.—Much blood escaped on removal of the skull cap; adhesions at the falx, numerous filaments extend over the surface of the pia mater. The pia mater much inflamed—interiorly red as a sheet of blood, particularly near the vertex. Water was effused in quantity in all the ventricles, and also at the base of the brain.

## CASE VIII.

Barbados, *May 12th, 1815*.—A sergeant of the York Chasseurs, on the morning of the 5th, when in the act of shaving, became faint, giddy and speechless, the face distorted. He was brought to the hospital immediately, and four pounds of blood were abstracted from the arm. He recovered his speech, and said he was very well; but, though he said he was well, he acknowledged that he did not sleep: he could not put his tongue beyond his teeth, as if from want of power; he passed his urine and stools in bed; and, though his answers were generally pertinent during the day, he was often delirious and very unruly at night. At most times however he was quiet, he lay in one po-

CHAP. III. sition, took drink when it was offered to him, and even nourishment. The pulse was scarcely febrile—it was without energy and force; the skin was flaccid; the heat nearly natural; there was no distortion of the countenance, or dilatation of the pupils of the eye; and, though the answers were generally pertinent, the intellect was not clear; there was immobility, or defect of power. Died on the 12<sup>th</sup>, and was *opened*.—The membranes of the brain not inflamed; the substance of the brain flaccid; the ventricles large and full of water; a mass of blood and purulence in the centre of the brain of such extent as never before occurred to my observation—the surrounding substance soft and tending to dissolution. The appearance was altogether singular, viz. a gangrenous abscess in the centre of the brain. It seemed to have commenced suddenly as if by explosion.

#### CASE IX.

Barbados, November 13<sup>th</sup>, 1814.—A man of the Royal Artillery was brought to the hospital to-day, complaining of numbness of the limbs, particularly of the arms which were tremulous and unsteady. He had slept in the open air during the preceding night, and was supposed to have taken cold. He had no pain of the head, or any material pain in any part. He was bathed in a bath of moderate temperature, an emetic was given, and a considerable quantity of biliary matter was ejected—with relief; the arms were less tremulous; a purgative was also given, and he seemed upon the whole rather better; the pulse low, but regular—not frequent and not weak; the skin damp, but rather moist and unpleasant; the tongue rough, but not foul. 16<sup>th</sup>,—became delirious about two o'clock p. m.—says he is to die to-morrow, and intreats he may be permitted to do so as becomes a soldier; the pulse is low but regular—not much accelerated; no complaint of pain of the head. 17<sup>th</sup>,—unruly in the night; tongue rather foul; little increase of thirst; sweats—the sweat clammy:—fancies he is going to be poisoned. Died about ten o'clock: the body *opened*.—The dura mater considerably inflamed, the interior membrane to a

great degree; the blood vessels on the surface of the brain very turgid; a great number of filaments forming strong adhesions at the falx; the blood vessels in all parts of the brain turgid; in many places almost black. An unusual quantity of water in all the ventricles and at the base of the brain. The stomach and intestines not materially diseased.

#### CASE X.

Barbados, *January 26th, 1815*.—A man of the 2nd battalion of the 60th regiment was attacked with fever on his passage from Grenada to Barbados. When he arrived at Barbados, he was received into hospital; he was then delirious—the delirium accompanied with tremors and agitation; at times he was sensible, and fever was scarcely perceptible; that is, the pulse was regular and slow; the skin was generally dry; the lips dry and rather pale; the tongue clean, or very little furred; no appetite for food; very little sleep: a dry and irritating cough supervened with a pain in the left side near the back. He died suddenly, as if from suffocation: the body was *opened*.—The brain and its membranes were much inflamed—the vessels on the surface numerous and distended. A piece of bone, the size of the nail of a man's little finger presented itself on the anterior lobe of the brain, near the falx; adhesions at the falx in various places; extensive elongations of filament, and effusions of matter assuming an ossifying process in different places; a great quantity of water under the interior membranes; the lateral, and indeed all the ventricles prodigiously distended with fluid; a great deal of water at the base of the brain; the blood vessels turgid throughout; a large abscess (*vomica*) in the left lung—recently burst.

#### CASE XI.

Barbados, *February 2nd, 1815*.—A man of the York Rangers, of irregular and dissipated habits, had been ill three days before he was sent to hospital. He was valetudinary, or cachectic constitutionally. On the *29th of January*, he was at-

CHAP. tacked with head-ache, vomiting, &c. and sent to the hospital  
III. to-day. He was bled to the amount of two pounds; the pain  
of the head abated; the vomiting continued; a blister was ap-  
plied to the stomach; and, in short, every kind of remedy that  
could be thought of was employed with a view to allay the vo-  
miting; they were without effect. The pulse was frequent—  
not expansive; the skin dry, or damp and greasy; the abdomen  
somewhat inflated; the tongue red and rough—dry; thirst con-  
siderable. *February 3rd*,—vomiting abated; pulse frequent  
and small; skin damp and greasy; ideas wander,—perceptions  
not clear. *4th*,—died in the night: *body opened*.—The pia ma-  
ter exceedingly inflamed; adhesions at the falx strong and con-  
siderably extended; the falx itself much inflamed—almost gan-  
grened in some places; the inner surface of the pia mater red  
as a clot of blood; water in the lateral ventricles and at the  
base of the brain in considerable quantity. The lungs solid like  
liver, compact and impermeable to air in some places; the liver  
rather bloodless; no abscess and no apparent change in struc-  
ture; the inner surface of the stomach speckled like measles,  
particularly near the cardiac orifice; the inner coat of the colon  
diseased—red and inflamed generally.

#### CASE XII.

Barbados, *April 22nd, 1815*.—C—, a man of the York  
Rangers, having had a slight feverish indisposition was dischar-  
ged from hospital in apparent good health. He went on duty;  
and, being observed to droop while on guard on the *20th*, and  
not being able to give an account of himself, he was sent to the  
hospital. The skin was neither hot nor cold; it was flaccid  
and inanimate; the pulse not energetic; the thirst considerable;  
the tongue rough; the lips dry; the eye and countenance calm,  
but dull and torpid; the pulse scarcely perceptible. He died  
in the night—in about thirty hours after he was sent to the hos-  
pital: the body was *opened*.—There were many turgid blood  
vessels on the interior membranes; adhesion at some places;  
there was little water in the ventricles,—a great deal at the base

of the brain; the substance of the brain itself was unusually flaccid—in a manner liquefied, and so tender that it could not be handled, though the subject was opened soon after death. The spleen was a mere clot of blood; the liver sound in external appearance, its interior substance so soft or rotten that it could not bear to be handled without falling to pieces.

## CASE XIII.

Barbados, November 20th, 1813.—A man of the 90th regiment, received into the surgical ward on account of suppression of urine, supposed to proceed from stricture, but in reality a symptom of fever, was brought on the medical journal this day. He had been bled and bathed; other things had been done with a view to act on the supposed stricture. There were tremors, agitations, great pain; the skin was withered and dry; the lips dry; the tongue so dry and rough that he could scarcely speak or swallow; the pulse was frequent, small and irregular. Ten grains of cobweb were given with a view to procure respite—he expressed immediate ease; the skin became moist and warm; the tongue moist and moveable. Evening,—less agitated than he has been; but the tongue is rough and dry—and he is thirsty; camphor and æther; cobweb repeated; expressions of ease; a peculiarity in the countenance indicating the approach of delirium. 21st,—slept in the night,—less agitated than he has been; tongue dry and rough; respiration hurried at times:—always easier, for some time, after taking a pill of cob-web; lips rather pale; countenance pale; makes water freely; one evacuation by stool in the night; skin rather clammy; pulse somewhat slower—harder than natural. Evening,—the skin rather cold and damp; the pulse hard and frequent—120; the lips pale; ideas confused; tremor, agitation; body open; tongue so dry that his speech is scarcely understood. 22nd,—died in the morning: the body *opened*.—Adhesion of the right lung to the pleura costalis, but no disease of the lung; heart, liver and stomach sound: no marks of inflammation visible in the brain or its membranes; effusion of fluid under the

CHAP. pia mater, in the ventricles, and at the base of the brain: no  
III. marks of disease in the urinary organ.

## CASE XIV.

Barbados, *June 5th, 1814.*—B—, a man of the R. Artillery, had been for a month or more in a state of mental derangement. He was naturally a quiet and well-disposed man, and was first suspected to be deranged from singing almost every thing he said. He did not sleep; he complained of no pain and took food in his usual manner. When I first saw him, he was confined by the strait waistcoat; he was then singing, or pronouncing every thing he said in cadenced rhyme. He was restless and much excited; he then became low, spoke only in a whisper, and at last sunk like a person gradually worn out.  
*Opened.*—The cortical part of the brain tender,—an appearance of feeble cohesion; the pia mater inflamed throughout; marks of inflammation and cheese-like substance near the falk; unusual redness near the longitudinal sinus; the ventricles deluged with fluid.

## CASE XV.

Barbados, *October 24th, 1813.*—B—, R. Artillery, seized with a paroxysm of fever to-day; the rigors or tremors severe, and of long continuance; no vomiting, and no complaint of local pain. Bled to the extent of four pounds; warm bath; purging mixture. Evening,—perspires and is now easier; the tremors abated; he vomited at intervals, and had two evacuations by stool. *25th*,—no sleep; tongue foul; bad taste in the mouth; skin moist—even to perspiration. Evening,—rather delirious; tremors returned; agitation considerable; skin cool and moist; pulse irregular; no vomiting. *26th*,—seized with universal cramp or spasm last night about nine o'clock, and died immediately: the body *opened*.—No marks of inflammation in the brain or its membranes;—more than the usual quantity of water in the ventricles. No marks of disease in the alimentary canal, except that the colon was unusually distended,

and that there were a few red spots in the interior of the stomach like the heads of large pins, with a certain quantity of white mucus not having the appearance of a healthy secretion.

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III

## CASE XVI.

Barbados, *August 11th, 1814.*—Parpewaske, brought to hospital at nine in the forenoon, speechless and insensible, having been attacked with symptoms of fever some hours before. The eye was turgid, the pulse quick and full, the skin warm and dry, the tongue foul. Bled to sixty-four ounces: he uttered words incoherently; sick at stomach, did not faint; head shaved; a bucket full of cold water poured upon the bare scalp; a blister applied. Salts and tartarized antimony. Six o'clock p. m.,—considerably better; several evacuations both upwards and downwards; the intellect somewhat confused; blister to the nape of the neck. 12th,—speech distinct; head relieved; febrifuge powder. 13th,—No complaint, except of weakness. 14th,—bowels confined; purging mixture. 15th,—attack of fever in the night—not severe; pulse quick, skin hot, uneasiness at stomach, bowels open: febrifuge powder; blister to the stomach. 16th,—better. 17th,—infusion of bark with muratic acid. 18th,—medicines continued. 19th,—convalescent. 24th,—discharged.

## CHAPTER IV.

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*Forms of Local Febrile Action manifested externally.*

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### SECTION I.

*Ophthalmic Form of Fever.*

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IV.

OPHTHALMIA, or rather an ophthalmic form of fever has been frequent in the British army since the year 1801 ; and it appears to have been more frequent among those regiments, which served the great campaign in Egypt in the year 1800, than among others. I cannot pretend, from my own observation, to form an opinion concerning the degree and extent of its contagiousness. It has appeared to me to be endemic, and to arise, on most occasions, from inexplicable circumstances of locality. A troop of Hussars, of the corps Hompesch, quartered at a sugar plantation in the plain *Cul de Sac*, in the district of *Port au Prince* and

island of St. Domingo, suffered extremely from a disease in this form in the month of December 1796. The indisposition prevailed so generally in the troop that few escaped from an attack of it: it in fact absorbed every other form of disease. When the subjects of it were brought to the hospital at *Croix des Bouquets*, a village in the neighbourhood, they often experienced a change in the mode of action, viz. from ophthalmic to dysenteric, sometimes to intermittent or remittent; more especially where astringent or repellent applications had been made to the eye without previous and copious evacuation. The action of the disease was, in this case, more directed to the appendages than to the ball of the eye; that is, the inflammation was humoural rather than dry and ardent. It was this occurrence in the Hompesch Hussars which first gave me the idea of introducing the ophthalmic into the chain of febrile forms: what I have seen since, in other situations, confirms me in the opinion that I am correct in so placing it.

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## CURE.

Ophthalmia has been so fully described by recent writers that it is not necessary to make any observations in this place concerning its history. The cure of the recent disease is also so simple that all I have to say upon it may be comprised in a few words. It depends principally upon sudden depletion by abstraction of blood. Bleeding is now

CHAP. IV. admitted by all the surgeons of the British army to be the first remedy and the most important. The introduction of it is due, if I am not mistaken, to Dr. Borland, inspector of hospitals. The ophthalmia, which had been a troublesome disease among the British military ever since the return of the troops from Egypt, prevailed to such extent in the year 1805, in several corps, as to occasion some alarm; for, if it did not destroy life, it destroyed sight, which is tantamount to the life of a soldier. It appeared with violence in the cantonments on the coast of Kent. Dr. Borland, who was then assistant to the Inspector General of hospitals, repaired to Shornecliffe—a principal station, as a volunteer to satisfy himself, by actual inspection, of the circumstances of the case. He considered the circumstances carefully, and digested from the result a plan of treatment through which he expected it might be safely and easily cured. Experiment was made; and, effect being satisfactorily established by evidence, instructions were sent from the medical board office under sanction of a member of the board, viz. Inspector General Knight, for the guidance of regimental surgeons in the treatment of this disease. The instructions were attended to; and I may add that, where the plan recommended, the basis of which consists in bleeding, was properly conceived, applied in time, and carried to the proper extent in application, it rarely failed of success. On this subject, I do not know that there is any difference of opinion in so far as respects

recent ophthalmia: the chronic ophthalmia does not yield to the same treatment; but that form of disease is not here under view.—It is not in fact known, where the plan, instituted through the suggestions of Dr. Borland has been applied with skill and decision during the early stage.

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The ophthalmic form of fever prevails among the troops in the West-Indies in some situations and in some corps more than others. It was frequent among the soldiers of the 90th regiment, one of the corps which served in the expedition to Egypt in the year 1800. The plan of cure pursued in that corps was depletive; but depletion was not always prompt and extensive; hence the cure was often tedious and not always perfect:—the sight of several was blemished, and few were dismissed from the hospital in less than six weeks.

The ophthalmic form of fever did not often fall under my own observation in its recent stages during the period to which this sketch relates; but it fell under it often enough to prove to me that the cure was not difficult, if the plan was well laid, and if suitable means were applied in time; that is, before the structure of the eye was actually violated. Abstraction of blood, as the first, is the remedy of principal dependence; it is the one in fact without which others are of very uncertain effect. The quantity necessary to assure the arrest of the morbid act, under its more violent form, cannot be estimated at less than from three to four pounds. The amount is high; but whatever it may be, the purpose

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IV. must be assured before the arm is bound up. The disappearance of the red veins indicates that the point is attained; that alone determines the amount of the measure. When the course of the disease has been arrested by the abstraction of blood, emetics, purgatives, diaphoretics, diluents, blisters to the temples and nape of the neck, equal and well adjusted pressure upon the ball of the eye by compresses wet with camphorated eye water, acetated water of ammonia, even spirits of wine, during the abstraction of blood, and continued under the operation of all the other means of evacuation, are the principal means which assist in the removal of the symptoms, or which prevent their recurrence.

An extreme degree of irritability—a degree so excessive that the patient cannot open his eye or bear the slightest impression of light, often remains after the appearances of actual inflammation are removed. An infusion of the herb euphrasia, or eye-bright has singular good effects in such case. An experiment was made at Barbados, to ascertain the fact, on a sergeant of the 8th West-India regiment, a corps of Africans. The sergeant, an European and private of the 90th regiment, had been bled largely, taken emetics and purgatives, and was blistered at the neck and on the temples. The redness of the ball of the eye was removed: irritability remained to such an extreme degree that he could not bear the slightest impression of light without intolerable pain. A draught of strong infusion of eye-bright, in quantity about half a pint, was given

while he was in this condition. The restoration of the power of opening the eyes was the immediate consequence, the effect so remarkable that he was enabled to look steadily into the sun-shine of a tropical climate. When the irritability returned, or threatened to return, it was removed by a repetition of the draught.—The fact is distinct; and, from it and others similar, I think I am warranted to recommend the herb eye-bright for the cure of ophthalmia, internally and externally as lotion. By the help of it, after the inflammatory state is removed by bleeding, and prevented from returning by the judicious employment of emetics, purgatives, blisters, &c. the disease may, if I can venture to speak from limited experience, be perfectly cured in five or six days; while, under the feeble and temporizing treatment of former times, it often continues for as many weeks, and even sometimes for as many months.

## SECTION II.

### B. *Ulcerative Form of Fever, as manifested on the lower Extremities.*

Cutaneous eruption, (blotch, pimple or phlegmon,) terminating in ulcer on the lower extremities, often appears among the military during their service in the West-Indies; and it often appears among them under such circumstances, and pursues such a course when it appears, as if it depended

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IV. upon modifications in the action of the general cause of fever, of the nature of which we cannot form opinion. In the dry, rocky and hilly districts of the interior of the tropical islands, and on sandy or rocky eminences near the sea, sores on the legs are a frequent, a perplexing and sometimes a destructive complaint among soldiers. They are even so frequent on some occasions as to deserve the name of epidemic, especially in particular places at certain seasons of the year: they are little known at others, viz. in the less healthy months at the less healthy stations on the sea coast.

It will, perhaps, be considered as an outrage to nosology to class ulcers on the legs among febrile diseases. I have taken the liberty to do so; it is therefore necessary that I state the grounds on which I have done it.—The health history of the third regiment of foot, a corps which I joined at Spithead, in November 1793, first suggested the idea. The third regiment, when it first came under my notice, presented a sick list of variety, viz. blotches on different parts of the body resembling moist itch, ulcers on the legs, and a few cases of genuine fever of the type usually distinguished by the name of *typhus*, the whole apparently connected with the operation of one general cause. These forms of disease, increasing or diminishing in number and intensity according to circumstances, adhered to the corps until the beginning of summer 1794; when, after some weeks of encampment on the sea beach, joined with daily personal ablution

in the sea, they totally disappeared. The fact, now stated, suggested the idea that blotch and sore leg were in some way or other connected with, or dependent upon the febrile contagion which then existed in the third regiment to some extent. This idea of identity of cause, which presented itself only as a probability at the time, was extended, and, in some degree, confirmed by what was observed in a body of troops which was assembled on Spike island, in the Cove of Cork, in autumn 1795, for service in the West-Indies. The writer arrived at head quarters, in the month of October, to accompany the troops to St. Domingo. In examining their condition as inspector, he found the diseases usually termed febrile few in number, the dysenteric considerable, sores on the legs in great number, and some of them of a bad kind. The existence of sores on the legs is considered as a cause of exemption from service in the West-Indies; and, as the force collected on Spike island was not the elite of the army either in physical or moral character, it is not improbable that sores were sometimes made artificially with a view to assure rejection from a service that was generally disliked. I cannot say it was not so; but, I cannot believe that the practice, if it did take place in some instances, extended to the whole, even to the majority. In a force, not exceeding three thousand men, between four and five hundred were so disabled by ulcers on the legs as to be deemed unserviceable: they were therefore discharged on the

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IV. spot, or they were sent to a depot in the vicinity to be discharged at a future occasion. Many were young, and, independently of the sores on the legs, eligible for soldiers. It was therefore thought to be proper to try, if any thing could be done for them by surgical treatment. In pursuance of this view, about thirty persons were selected from the mass, put on board of a clean and wholesome ship in the harbour, supplied with every provision of diet and clothing that could be desired, and committed to the care of one of the surgeons belonging to the expedition for treatment. The result was not satisfactory. The slighter form of sore, instead of assuming the healing process under the means employed, degenerated, before the expiration of a fortnight, into a foul and sloughing, or gangrenous and bleeding ulcer, the ulceration accompanied with sensations of burning, stinging and lancinating pains, a haggard and dejected aspect of countenance, an excess of constitutional irritability and timorousness, a fetor of the sores intolerably offensive,—such aggravation in fact, as made it necessary to break up the establishment.—The cause of contagious fever existed on Spike island in the month of October: the febrile forms were then few and obscure; subsequently they were numerous and aggravated, the cause concentrated to a state of as high virulence as contagion almost ever attains. The ulcerative form prevailed to an extraordinary degree: it appeared to the author to be one of the modes under which the contagious action was mani-

fested; it vanished after the febrile form became general and virulent.

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Ulcer on the legs has been a perplexing complaint among the military in the West Indies in all periods of medical history; and among others, the expeditions sent to that country in the year 1796, furnish memorable examples of the fact. Berbice and Demerara, settlements on the coast of Guiana, were taken possession of by a division of the force originally destined for St. Domingo. The 93rd, one of the regiments sent on that service, was stationed at Berbice; and, according to a report of an officer of credit, little or no sickness, except ulcer on the legs, was observed in it for at least four months: that was however to such extent that, in a corps short of five hundred, seventy of the elite were, during this time, rendered permanently unserviceable. The 99th, another regiment employed on that service, was stationed at Mahaica. The sickness at Mahaica assumed the concentrated febrile form: ulcers on the legs were not observed. The 39th, another corps of the expedition, occupied Starbrock: the febrile form of disease was remittent; sores on the legs appeared on some occasions. The sore leg form, according to this statement, was almost sole at Berbice: it did not occur at Mahaica where the febrile form was continued and aggravated: it occurred occasionally at Starbrock, where the form was remittent and of the milder kind.

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The part of the force which arrived at St. Domingo was dispersed over a large extent of country: as such it experienced a series of diseases, apparently modified in their forms by the qualities of locality. Fever appeared under a concentrated continued, or under an aggravated periodic type at certain points on the sea coast, more intense in its symptoms in certain months of the year than at others. Intermittent fever, dysentery, and sores on the legs were chiefly conspicuous at the stations in the interior. The sore leg form was chiefly conspicuous in the drier months of the year; and, though it was most common in the interior among the mountains, it also sometimes appeared on dry and rocky heights, or eminences near the sea coast. It was remarked that, while fever predominated in one corps, dysentery or sore leg prevailed in another, which did duty in the same garrison; and it was further remarked that, where the febrile form became general, the dysentery or sore leg declined, or actually ceased.

The circumstances which were observed in the 3rd regiment of foot in 1794, and the occurrences which took place in the force which was collected on Spike island, in autumn 1795, impressed the author with the idea that the ulcerative form of disease, as here described, is radically connected with the cause of contagious fever. The history of health among the troops in St. Domingo brought evidence, satisfactory to himself at least, that the connection extended to the endemic: the experience which he

has since had in different scenes of service confirms me in the opinion then formed. The febrile, the dysenteric and ulcerative forms of disease are ordinarily the three prominent columns in the sick returns of military hospitals. Sometimes the one predominates, sometimes the other: but, fluctuate as they may, a balance is generally observed between them, so poised and so adjusted as to furnish a valid argument that they ultimately have their dependence on the same general cause, modified by circumstances often so minute, or so complicated as to escape detection.

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The ulcer on the legs, as apparently connected with the general cause of endemic or contagious fever, begins differently in different persons.—I. It sometimes commences as a superficial pimple or blotch, resembling an expanded small pock; sometimes it assumes the phlegmonous form, the base circumscribed and more or less extended. The cuticle separates at an early period in one case, the phlegmon suppurates and bursts in the other. The matter discharged is ordinarily thick and white, or yellow and well concocted. The surface dries and heals readily of its own accord, or under some simple application, in the superficial blotch. As one blotch heals, another not unfrequently breaks out, discharges a well-digested matter for a few days, and then heals in the same manner as the preceding. It thus happens that blotches break out and heal in succession for a considerable length of time, the health of the subject not being thereby

CHAP. IV. impaired in any material degree, and there being upon the whole, an exemption from other form of malady during its continuance.—The sore which follows the phlegmon is stationary; it heals in a given time, or it degenerates into a troublesome ulcer according to circumstances.

2. The ulcer commences on many occasions by the sudden appearance of a hot and painful point or pimple, which often becomes phlegmonous with more or less elevation. The diseased circle expands; the skin is tumid, red and shining; the sensations of pain pungent and burning. The cuticle separates; the ulcerating process commences, penetrates the adjacent parts with more or less rapidity, extends to the periosteum, and, in many cases, to the substance of the bone itself. The matter discharged from ulcers of this description is sometimes thin at the commencement; sometimes so acrid as to excoriate by its acrimony; sometimes it is copious, glairy, dusky-coloured jelly-like substance, more or less bloody. The surface of the sore is sometimes foul, fungous and protuberant, the edges thick, red and shining; sometimes the adjacent parts break down rapidly into a disorganized mass, which is thrown off by sloughs, leaving a hideous foul cavity underneath.

3. A point or vesicle, of little elevation and of a dark colour, makes its appearance on other occasions. The cuticle separates; the surface discharges an ichorous and bloody fluid, which in a short time becomes dark and grumous,—sometimes almost

pure blood, sometimes blood mixed with putrid disorganized substance in various proportion. The course of this form of sore leg is rapid; the termination not unfrequently fatal, unless strong measures be taken to counteract its tendency.

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4. The forms of sore leg now described may, according to the principle assumed in this sketch, be strictly regarded as the explosive act of a febrile cause on an external part. The disease assumes the healing process at different periods of time, and under different modes of treatment; or, it destroys the substance of the limb, and ultimately effects the general death of the subject. This I consider as a course of one tenor terminating favourably or fatally in a given time; but besides this, there are many forms of the disease, in which the diseased surface becomes fungous and prominent, the centre rises like a colliflower, the edges become shining, thick and callous: there is upon the whole a new growth—unnatural and unsound. This attains a state which may be considered as maturity; and, when so matured, it falls off, or is protruded by another growth of a similar kind. Under a succession of such unnatural production, the disease often continues for months, even for years so as to become in some degree constitutional. When it penetrates to the bone, a hectic fever arises:—the disease does not then appear to be curable by any other means except the removal of the limb.

To the outline description of the more common forms of sore leg given in this place, I take leave

CHAP. IV. to add that though sore leg and formal fever sometimes appear at the same time in one garrison, they rarely appear at one time in an equal degree in the same corps, or same description of people; much seldomer, if ever, in the same individual person. But, though the epidemic sore leg generally disappears from a corps where the genuine febrile form becomes common, yet it happens not unfrequently that fever supervenes in an individual when the sore begins to assume a healing appearance, and that the supervening fever is mild and tractable, or violent and malignant according to the mildness or malignity of the preceding local disease. Formal fever and morbid ulcer on the leg do not often, if ever, exist together in the same person; the constitution of the individual appears notwithstanding to be under a morbid influence during the ulcerating process. The constitutional irritability is generally increased, even in the slighter forms of the disease; in the more aggravated, it is often extreme. The sensation of pain recurs periodically. It is often intense, stinging, burning and peculiarly irksome during the night; sleep is imperfect; appetite impaired; the tongue ordinarily white and foul,—indicative of disordered action in the digestive organ. The countenance is sallow and haggard, or dull and lurid,—peculiar in expression. The pulse is more or less irritated, but, strictly speaking, not such as is called febrile. The skin is often dry, unpleasant to the touch, sometimes damp and greasy, rarely warm, glowing and

animated. The mind is irritable, fearful, dejected and desponding. Besides diurnal aggravations of pain and irritability, periodical recurrences of the sloughing process occur not unfrequently after the ulcer has become clean, even after it granulates and begins to skin. The approach of the recurrence is indicated by something unusual in sensation on the open surface, by an appearance of dryness and unusual paleness, followed by tumidness, redness and burning heat at the edges; and, in the course of a few hours, unless decisive preventative measures be adopted, by sloughing or breaking down the work of a fortnight or longer period. The slough forms, and is cast off: the surface becomes clean, and again begins to granulate and to heal: the same process recurs again and again: the disease thus becomes constitutional and continues for an indefinite length of time\*.

### CURE.

As the ulcerative form of the disease is here considered to be a form of local febrile action, so it is reasonable to suppose that the cure of it will be laid upon the same base as that which constitutes the base of proceeding in common febrile diseases, viz. arrest or subversion of the diseased act in the part,

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\* The sore on the leg described above, whether simple, mild and disposed to assume the healing process, or gangrenous and rapidly destructive of solid substance would seem,

CHAP. and subsequent excitement of an act analogous with  
IV. that of health in the part and in the whole.

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from the circumstances stated, to be connected in its origin with the general cause which produces fever, either endemic or contagious. I think I am safe in making this conclusion. I do not venture to extend the inference to the sloughing gangrene which supervenes upon gun-shot or other wounds; because I have no direct experience of such form of disease, and have only been drawn to the notice of it by the writings of Mr. Hennen and Mr. Blackadder, which have made their appearance since the publication of the first edition of this work. Mr. Hennen, in a volume of great value to military surgeons, has, among other important matters, given a striking picture of the progress and ravages of the gangrenous ulcer as it occurred among the wounded at Bilboa in Spain. His observations were made, as it may be said, at the bed-side: there are grounds to believe that they were made with care; and, as it appears to myself, they are reconcileable with the principle of connection that is assumed in this place. Mr. Blackadder was stationed at *Passage* in Spain. His observations were of course made in the same general field and on the same class of subjects as those of Mr. Hennen: the history of the fact accords, the theory of the fact is different. Mr. Blackadder considers the gangrenous ulcer as specific, produced and propagated by the direct contact of specifically contagious matter to an open surface. I cannot pretend to say that it is not so; but I may venture to say that the disease occurs where no human penetration can trace it to a source. The medical history of armies shews that the gangrenous action sometimes arises suddenly and unexpectedly, and spreads so rapidly that it can scarcely be supposed to have its origin from actual contact of person, much less from contagious matter applied to a suppurating surface: it appears in fact to be infectious by imitation of what may be supposed to fall within the sphere of vision. The gangrenous form of ulcer is moreover considered by Mr. Blackadder to be specific;

1. It is often necessary, with a view to overcome the diseased tendency which obtains in the mild, or blotch form of sore leg, to abstract blood from the system in greater or less quantity, to give purgatives of brisk operation, viz. jalap with calomel or chrystals of tartar, salts, tamarind beverage, spruce

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IV

and he seems to believe that it assumes its specific form, so as to generate the matter which produces its kind, before it materially affects the system. I cannot pretend to say that it is not so; but I cannot comprehend, according to my view of animal economy, in what manner a specific matter can be generated in any part within the system without what may be termed an act of the constitution. The history of the propagating act appears to me to be uniform, viz. the morbid poison, of whatever nature it may be, makes impression upon a particular point of the animal system, enters a given description of vessels, and advances inward until it strike upon the common centre of life and motion; from whence it is reverted upon the original point with creative power, assuming activity and propagating its kind according to the nature of the poison. The progress from the surface to the centre is comparatively slow; from the centre to the surface or point of original impression, it is often rapid as lightning; the explosion, or manifestation of the propagating act is in fact instantaneous. The testimonies in proof of this opinion are numerous and familiar. The specific form can, according to my opinion, be given only through an act of the constitution; the effect, or expression of the act notwithstanding is here and elsewhere a local disease, capable of being cured, or subverted by local application which effects destruction of the part. This I consider as proved beyond dispute and I take the liberty to add that, if Mr. Blackadder's theories be questionable, his practice is that of a man of science and decision: as such he is entitled to the respect of the public, and the thanks of the British army.

CHAP. beer or other diluting and alterative liquid for drink,  
IV. to enjoin abstinence from animal food, and to interdict the use of wine and other strong liquor with rigour.

2. In the ulcerative form of fever, whether the discharge from the ulcer be thin and acrid, or glairy jelly-like substance with rapid solution of continuity, abstraction of blood from the veins, according to my own view of the case, is to be considered as preparatory, not as absolute means of remedy. The quantity abstracted at one time is to be measured by circumstances: it is rarely necessary that it be high, but it is generally necessary that the abstraction be repeated at short intervals, with a view to effect a change in the state of the circulating fluids; for, with that, the condition of the ulcer is more or less connected. Besides bleeding, purgatives, administered every other, or every third day, conduce materially to check the diseased and to forward the healing process, particularly where the sloughing is rapid, the discharge copious and glairy. Animal food and strong liquors are evidently hurtful; they are therefore to be rigidly interdicted. In one habit of body, viz. gross and pituitous, muriate of ammonia, acetated water of ammonia, the expressed juice of wormwood, trefoil, scurvy-grass, &c. promise to be serviceable as added to the drinks; in another, viz. the irritable, where the discharge is thin and acrid, milk, whey, and bland nourishment may be supposed to be the most suitable. Poultices of herbs or roots, viz.

carrot, stinking pea, roasted limes, lemons, or bitter oranges, powder of bark, rhubarb, &c. applied to the ulcerated surface, produce, in many cases, favourable changes on the condition of the sore, especially where the discharge is copious, foul and acrid. Bandages of sticking plaster, viz the red lead plaster, applied in the manner first directed by Baynton, and applied carefully by a surgeon who is aware of the advantages of bringing the open surfaces into near contact, and of maintaining them in that state, are materially serviceable in forwarding the healing process once it is begun: they are of no value in the recent and sloughing stage. The balsam of Peru appears to have been applied with manifest good effect in some forms of sloughing ulcers. The solution of arsenic produced favourable changes in sloughing wounds under the management of Mr. Blackadder at Passage in Spain: it is probable that the actual cautery would have been decisive of benefit in the most desperate. Besides external application, internal remedy is necessary in the bad forms of ulcer; and of these, emetics, purgatives, abstinence from animal food and wine, frequent ablution of the diseased limb, and even of the whole body with cold salt water; and, where it can be attained, change of place, are among the principal.

3. In the form of ulcer which may, with some propriety, be called gangrenous, as the circulation of the blood is sluggish or disposed to stagnate generally and locally, it is evident that blood let-

CHAP. IV. ting to a certain extent constitutes the primary means of accelerating the movement, of readjusting the balance, and of thereby conduced to restore the due action of life throughout. But, though abstraction of blood be important and often indispensable in this form of disease, it requires to be conducted with great care and circumspection. It is held to be primary in effecting a change in the condition of the gangrenous ulcer; but it is not sole. It is necessary, in order to give effect to its operation, that stimulants, both internal and external be joined with it: of internal remedies, camphire, ammonia, nitre, bark, vitriolic acid, snakeroot, powder of charcoal, purging tincture of myrrh and aloes are important. Of external applications, poultices of yest, poultices of carrot with charcoal; and, at an after period when the surface is somewhat cleaned and the foulnesses washed off by warm water, pledgits of lint soaked in tincture of myrrh and aloes, or powder of bark laid upon the open surface are frequently of benefit: they effect changes in the diseased secretion and apparently give commencement to the healing act. The balsam of Peru, the arsenical solution and the actual cautery, as there is evidence of their being safe, are still more effectual applications than those now mentioned. Bandages of soap plaster, applied to the whole of the diseased limb with skill and discrimination by a scientific surgeon may be supposed, in certain conditions of the disease, to conduce materially to forward the cure, especially as aided by

frequent ablution of the limb and whole body with cold salt water, or stronger stimulant.—The above are the principal of the surgical means. With suitable diet, viz. acid fruits in quantity, cyder or spruce beer for drink, occasional allowance of wine, they may be supposed to effect, and do in fact effect such change in the condition of the habit as disposes the ulcer to assume the healing process.

4. In foul and fungous ulcers of long standing, (where the condition of the limb is more or less changed by the continuance of the disease), besides the application of escharotics of power proportioned to circumstance, viz. nitrate of silver, arsenical solution, burnt alum and red precipitate of mercury, even actual cautery, the compression of the limb, from the knee to the ankle, by sticking-plaster bandage, applied so skilfully as gently to force the open surface into new contact, and to maintain it in contact, particularly, as aided by judicious regimen, viz. a diet—farinaceous and spare in quantity, brisk purgatives at frequent intervals, occasional abstraction of blood, frequent ablution with cold salt water, or bathing in the open sea where the sea is contiguous, rarely fail to effect a cure in a comparatively short time; I think I may venture to say within six weeks, unless where the disease has reached to the membranes or substance of the bone, in which case neither time nor issue are within calculation.

Such is the outline of treatment that I venture to recommend for the cure of ulcers on the legs among

CHAP. IV. the military in the West-Indies. I give it with confidence of its good effect. I must however add, that as the nature of the duty of inspector of hospitals did not furnish me with the opportunity of making direct experiment on this subject, I should not now have compromised myself, by giving the directions I have given, had I not seen a similar view prosecuted by Dr. Borland, at one time surgeon to the forces, now inspector of hospitals. That officer had the medical and surgical charge of a division of the army in the island of St. Domingo in the year 1796 and 97. Instead of the mode of dressing ulcers then commonly practised, and of supporting the system, according to the language of the time, by nourishing diets and certain allowances of wine, he endeavoured to destroy the diseased surface by escharotics; but, in so far as I recollect, employed none of a stronger power than corrosive sublimate, burnt alum, red precipitate of mercury, or nitrate of silver. To these he joined abstraction of blood, and strong purgatives. By close attention to the aspect of the sores, he frequently discovered an impending recurrence of the sloughing process, both in ulcers and in stumps; and, having knowledge of the signs, he thought himself warranted to attempt to anticipate the impending explosion, if it may be so called, by abstraction of blood, strong purgative, and other evacuant:—he often succeeded, even in persons who were emaciated to the last degrees of emaciation by the continuance of the disease.

## CHAPTER V.

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### *Convalescence.*

IT will be proper, after what has been said respecting the cure of fever while the disease retains its ostensible febrile form, to add a few remarks on the state of convalescence which precedes the perfect re-establishment of health. The subject is important to the interests of the military; but the means of executing what is necessary in the case are rarely placed within the command of the military physician, consequently the desired end is not fully attained. The authority of the military physician is not supposed to extend officially beyond the walls of his hospital, and his suggestions, however founded in reason, and however well proved by experience they may be, rarely make impression on those who command in chief. For this reason, I consider the subject in a double view; and, in the first place, I consider it as depending on hospital treatment, in so far as that is within the power of the hospital physician.

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## SECTION I.

*Convalescence—as under the Influence of ordinary Medical Means.*

If such regulations obtain in the economical concerns of a given body of troops as assure that all persons, however slightly indisposed, be put under medical care at an early stage of indisposition, that is, within twelve hours or less from the time of attack; and if suitable means of remedy be then applied, under a full comprehension of the principle on which effect depends, I think I am warranted to say, from experience, that the course of the disease may be speedily cut short in most cases, that convalescence may be rendered rapid, and the recovery of health for the most part perfect. In examining the case books and registers of hospitals, where the method of treating fevers recommended in the preceding pages was fully understood and carefully applied, scarcely one person in twenty remained on the sick list after the fourteenth day; many were discharged within the eighth: instances of imperfect recovery were few; and none were recorded where dropsy and debility followed as a consequence of excessive evacuation and low measure of diet. This is an authentic fact, the living evidences of its authenticity can still be produced. But while this is true on one part, it may be seen in another, by examination of the records of the same hospital, that if time was lost at the commencement, or if the principle of the

practice alluded to was not duly comprehended, the act, though executed, being executed only in routine, the purpose was not attained decisively, the course of the disease was not cut short, the recovery was not complete; in other words, the disease ran its course, and, in its course, laid the foundation of chronic ailment, the removal of which was often a tedious and difficult task—sometimes an impracticable one.

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I have made the assertion that the system of treatment recommended above assures, for the most part, a speedy and decisive cure of the existing fever; I must add, at the same time, that if the fever proceed from a contagious source, and if the subject of it remain in the infected atmosphere of the hospital; or if it be such as is called endemic, and he remain in the centre of the noxious exhalations of the district where it arose, he is liable, however perfectly cured at the time, to suffer relapse—either in the same or in an altered form. Hence, as the cause of disease is supposed to float in the atmosphere, or to be dormant in the habit without form, it is the business of the physician, as physician, to watch the indications of its returning activity, and to anticipate the explosion of the act by the application of such means of prevention as are placed within his command.

It is important as facilitating medical labour, and it is still more imperiously urgent as augmenting the good effect of medical skill, to place persons who suffer under the same form of malady in

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the same ward; to remove them from sick wards to wards set apart for convalescents in the first stage of convalescence; and, at a farther period of progress, from the first wards of convalescence to wards that are set apart as probationary of the re-establishment of perfect health. By this arrangement, the *coup d' oeil*, as indicative of health, is uniform; reality corresponds with the *coup d' oeil*, the conditions of persons thus arranged being similar. A great saving of medical labour results from the arrangement; such arrangement has the effect moreover of acting beneficially on the final issue of the disease. The patient may be reasonably supposed to be impressed with an idea of amendment when he is ordered to advance to the convalescent ward: he may even be benefitted by the idea, and under that idea improve. The diet, regimen and discipline of the patients of the convalescent ward have a common base. Whatever is extra, as matter of diet, &c. exhibits a cause of necessity and is applied to a purpose under an obvious rule of utility. With regard to discipline, the convalescents, both of the lower and of the higher class, are supposed to leave their beds at an early hour—not later than six in tropical climates. After they have been completely washed and combed under the eye of a ward-master, in a part of the hospital enclosure allotted to the purpose, they assemble at breakfast according to their classes in the galleries of the wards which they occupy if the hospital be provided with galleries; if not, in the ward itself, after it has been cleaned and properly

arranged for a messing room. After breakfast, the convalescents of both classes are allowed to amuse themselves, or rather encouraged to amuse themselves with quoits or bowls, checks, or other game of pastime that has no relation to money gaming. The lower class of convalescents is allowed to repose on the bed whenever inclined to do so ; the higher class only when the desire of that indulgence is signified to the ward-master. The dinner is served at a fixed hour ; the material of the best quality and well dressed ; of different scales according to the degrees of convalescence,—upon the whole, under the allowed quantity of the health ration\*. Water is the allowed beverage of the con-

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\* The subject of hospital diet is one of considerable moment, of such moment indeed that it cannot be allowed to pass on the present occasion without remark, especially as my ideas on the subject do not accord with common practice. From my earliest observation of the economical management of hospitals, the value of what feeds a man in health appeared to be sufficient to find him sustenance when sick ; for, if his condition required more delicate and in some cases more costly nourishment, it required so much less in quantity as ordinarily left a balance of value on the favourable side of the account. Impressed with this idea, and confident in my own mind that it was true in fact and safe in experiment, I proceeded, in the year 1796, with concurrence of the chief in the department, to digest a plan of economical management for the hospitals of the Colonial and Foreign troops which were added to the British army for service in the island of St. Domingo. The plan was simple, viz. a ration, suitable for sick persons, commuted *ad valorem*—fresh meat in place of salt, soft bread in place of biscuit, wine in place of

CHAP. valescent; small beer, or lemonade, may be granted on some occasions. A small glass of brandy or

rum,—with the power of augmenting one part of the ration, viz. rice and sugar, and diminishing another, viz. beef and bread, at the discretion of the medical officer. The plan is simple and plain. It was carried into effect; but not without opposition, for it disannulled a contract which, contrary to usage in the British service, had been made with Colonial colonels for the subsistence of the sick of their respective corps—made at a rate which might be considered as the extreme of profusion. By the plan substituted for contract, the sick of the Colonial troops were amply provided for, and the enormous sum of eighty thousand pounds per annum was saved to the British government. This may seem incredible; but it is true, according to the calculations that were made of the expenses of the plan projected and that annulled on this occasion.—The Russian auxiliary force, which made part of the expedition that invaded Holland in the year 1799, was the next subject of experiment. This force was cantoned in Jersey and Guernsey during the winter, and the sick in hospital were subsisted by means of a ration commuted *ad valorem*. The Russian officers and the Russian soldiers were perfectly satisfied with their medical treatment, though no expense was incurred on account of it beyond the expense of drugs and hospital equipment.—The daily expense of subsisting a sick soldier in Great Britain in the year 1801 appears, by estimates made officially, to have amounted, in the most economical of the hospitals, to two shillings and four-pence per man. It was reduced, in the hospital for the army depot, to a fraction under ten-pence, including washing, provisions, pay of servants, &c.; yet under a reduction so striking, no person, who visited the hospital and who was competent to form judgment in the case, pretended to say that anything useful in the way of nourishment or refreshment was withheld from the sick of that establishment. The reduction amounted to near two-thirds of the sum expended in other

rum is allowable and useful as a liqueur after dinner—or, if more relished, a single glass of madeira

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hospitals for similar purposes. The saving was great; but in making it, the value of the money was not prominent in the view of the author. The retrenchment arose as the consequence of applying just measure to all the concerns of the department; for it had been sufficiently proved, from observation in a wide field of experience, that profusion, instead of aiding, had confused, corrupted and defeated medical effect in all the stages of the war 1793. Convinced of this truth I considered it to be my duty to state to the Chancellor of the Exchequer in the year 1804 that I had digested, and was ready to submit to the examination of competent judges, a system of management for hospitals, according to which two-thirds of the money expended on that account might be saved to the public. A view of the annexed return No. 1, furnishes proof that the assertion was not incorrect. The expense of subsisting a sick man in hospital in the island of Barbados appears, from this return to have amounted to four shillings and four-pence in the year 1803 when bread was at four-pence per pound; it was reduced to two shillings and two-pence in the year 1813 when bread was at ten-pence. From this, it may be fairly concluded that had market prices been the same in the year 1813 and in the year 1803, the expense of subsisting the sick would not have exceeded one-third of the actual amount. The comptrollers might be supposed to have cause to be satisfied with the money balance of the account; and not one of the military who, with the Commander of the forces, visited the hospital once a fortnight, and ascertained the fact of treatment by actual inspection, can or will, I believe, refuse testimony to any one who may ask for it, that sick men could scarcely be more comfortable than sick soldiers were in the hospitals at Barbados in the year 1813.—The proposition alluded to, which, as now observed, was submitted to the Chancellor of the Exchequer in the year 1804, though ostensibly one of much importance to the

CHAP. V. wine. The higher class of convalescents is sent to walk in the environs of the hospital, under superintendence, for an hour or more at a convenient time after dinner; the lower class is encouraged to pursue such amusements within the hospital enclosure as do not imply exertion or occasion fatigue. Supper, whether it consist of tea with bread, gruel, arrow-root, &c. is served at a given hour in the same regular manner as breakfast and dinner. An hour after supper, every person retires to rest. A lamp is suspended in the ward during the night: a table is placed in its centre, with drinking glasses and jars containing drinks of different kinds, viz. rice water, lemonade, vinegar and water, and pure water; and, thus provided, the convalescent is left to repose until morning. Every convalescent is supplied with clean body linen every second day, clean bed linen once a week: the higher class is

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interests of the service, obtained no notice. It was a voluntary offer of information on a subject which I had studied, on which I had acted, and on which I was entitled to have opinion. I believed, in simplicity of mind, that it was incumbent on the Chancellor of the Exchequer, who, as well as Chancellor, was first minister of state, to give effect to the plan proposed if, after rigid examination of its evidences, it should appear to be founded in truth; or that it was his duty, as the first organ of the executive, to disgrace and punish its author if it were proved to be false or deceptious. The proposition was disregarded; and I may be allowed to say that the disregard of it, as apparently important to the nation, furnishes, if it imply nothing more, a pointed example of indifference in public servants to public interests.

carried to bathe in the sea occasionally where the sea is within reach; the lower class is bathed in the hospital bathing room, submitted to the shower bath, or to cold and warm bathing alternated, followed by frictions with oils, &c. as may be deemed proper.

If crisis be decidedly marked in any given case of fever, and if the facility, though not the vigour of healthy action, be completely restored to the system with the ostensible termination of the fever, the causes which preserve life and maintain its customary efficiency will be adequate, for the most part, to bring health to its pristine state. The causes, which conduce to this, consist in temperance in eating and drinking,—a temperance approaching even to abstinence, viz. the food, light and stimulating rather than rich and nutritious, exercise in the open air in carriages, horseback, or on foot, active bodily employment, and a train of such amusements as interest and captivate the mind.

Where febrile action has ceased, the advances to health often proceed in a regular and favourable course for a given time. The diseased act recurs at a certain point, either precisely similar, or differently modified in appearance from the preceding: it is apt to recur at some periods more frequently than at others. This is ascertained as fact, and, being so, it is of some utility to investigate, in order to find out the laws which influence the recurrence. The human body, as we learn from observation, experiences more or less of septenary revolution in

CHAP. V. the course of its accustomed movement. I do not pretend to define the law and precise nature of the change, but I think I am warranted to say that it is in some degree connected with the different phases of the moon. As it is principally at septenary periods, viz. the seventh, fourteenth, twenty-first, and twenty-eighth, after a person is introduced within the sphere of the acknowledged cause of fever, that the febrile process openly explodes in action; so it is observed that the periods preceding new and full moon, exclusive of septenary influence, are also in a peculiar manner remarkable for the invasion and relapse of that disease. If this be so, the periods at which fevers are most liable to return being known, viz. seventh, fourteenth, twenty-eighth, with certain days preceding new and full moon, the means, best calculated to obviate recurrences at whatever period they may be expected, ought to be ascertained, and when ascertained, applied with attention at the suitable time so as to assure their full preventative influence. The means employed for this purpose are different. Some practitioners, with a view to accelerate recovery from disease, recommend full living, rich and nourishing diet with a liberal allowance of wine; others enjoin abstinence, interdict wine and prescribe all strong drink. Under the first plan of management, the habit fills apace and recovery goes on rapidly for a time; but relapse, in this case, often recurs suddenly and unexpectedly, while the dangers from relapse are generally in proportion to

the rapidity with which the habit has been filled by the previous full living. In a certain state of repletion, whether the more direct effect of full living, or the effect of gradual accumulation, attaining an acme at certain periods more than others, explosion of relapsed febrile action occurs frequently about the fourteenth day from the crisis, or regular cessation of the original fever. Peruvian bark, with a certain allowance of wine, is the remedy of principal dependence with many. It sometimes appears to succeed; it very often fails. The relapses which occur under the circumstances alluded to are numerous, sometimes serious, the symptoms conspicuous in the organs of the abdominal cavity more than in other parts of the system. The English practitioner, adhering to the national prejudice, generally recommends full living; the French, and most foreigners enjoin rigid abstinence; they even give laxatives at frequent intervals, prescribe cooling drinks and simple food, and peremptorily interdict strong wines or other strong liquors. Relapses, I may venture to say, are less frequent under such management than under the preceding; but I must add at the same time that recovery is slow, and that efficient health is rarely restored, until after the expiration of several weeks and even sometimes months; the balance of the account, in so far as respects the security of life, is however on the side of abstinence.

Such is an outline of the methods adopted by practitioners of different principles for forwarding

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CHAP. and assuring convalescence. That which I adopted,  
V. and which I now recommend to others for consider-  
ation, partakes of both. The means are the same ;  
they are differently administered, and administered  
with a different object in view. Where crisis is  
perfect, little more is required to effect the re-esta-  
blishment of health than a well regulated diet, with  
a correct observance of regimen. The diet of a  
person who is recovering from febrile disease ought  
not, in so far as respects quantity, to exceed one-  
half of the health allowance. But, though not high  
in quantity, it ought to be well dressed, and well  
seasoned with spicery as calculated to excite  
and to maintain the action of the digestive  
organ in a state of efficiency. Together with a  
moderate and well regulated diet, a cup of strong  
black coffee, a glass of liqueur, or a glass of brandy  
after dinner is evidently of service ; and on that  
account it ought to have a place in the convalescent  
diet table. Infusion of gentian, wormwood, eye-  
bright or other aromatic bitter, at intervals during  
the day, is useful. Purgatives are occasionally pro-  
per; and of purgatives, the purging tincture of  
aloes and myrrh appears to myself to be the best of  
the forms employed in the existing state of things.  
These, with due attention to exercise in open air,  
ablutions and change of linen, may be considered  
as sufficient to assure the convalescence of persons  
who are constitutionally sound ; particularly where  
the form of the fever, whether continued or pe-  
riodic, is regular and simple. Where the character

of the disease is such as is termed malignant; where the patient is forced to remain in the atmosphere of an infected hospital or ill ventilated barrack; or, where he is obliged to live within the sphere of swamp exhalation, the means of assuring convalescence are not so easily seen, or, if seen, so certain of producing effect when applied.

Where the crisis of fever is obscure, the disease suspended rather than decidedly judged, the aid of the physician becomes necessary, either to complete the crisis, or to prevent the recurrence of the disease in a formidable shape. A little wine, a little bark, a little opium, and even a gentle laxative has no useful effect where the movements of nature are thus undecided, or where the individual is exposed to the action of strong morbid causes. It is then necessary to agitate the system—to make forcible impression—and literally to urge the general tendency of the action towards that of health. An appearance of tranquillity, a deceitful tranquillity foreboding an impending storm, often presents itself on such occasions. The danger may generally be read in the countenance of the patient by those who are experienced: a transcript of it is not easily made in words.—The aspect, for instance, is lowering, the countenance clouded and grim, the eye dull and heavy—torpid and vacant, sometimes threatening and stern. The feelings are uncomfortable throughout, viz. sensations of horror and despondence, without power of reference to distinct cause. The pulse is sluggish, differing little, unless

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V. in want of energy, from the pulse of ordinary health. The skin is cool, destitute of general and animating warmth. The function of the alimentary canal is disturbed—impeded, irregular. Appetite for food is diminished; the tongue is often white and slimy, sometimes red, clean, and in a manner swollen, saliva ordinarily thick and clammy. The unexperienced physician is lulled into security by appearances: the physician of experience recognises danger; and, if he has courage to act with decision, he often succeeds in averting it. The existing condition marks congestion, or strong disposition to congestion in the venous system, approaching to stagnation, which terminates in the suffocation or oppression of the functions of important organs, viz. lungs, liver or brain. The preventative remedies, against the explosion of a disease which forms on this base, cannot be supposed to be of the feeble kind. Abstraction of blood presents itself among the first, either as principal or as preparatory; but the remedy, though necessary or indispensable, is not sole: it is not to be made without minute attention to conditions, or without accessory aids which increase and in a manner assure its good effect. In such case, the patient is to be placed in the warm bath, the extremities at least in a tub of warm water: the skin is to be rubbed with soap and scrubbed with brushes; and, when an effect from bathing and bleeding has been attained to such extent as is safely attainable, the body, after being dried and rubbed dry with flannels, is to be placed

in bed, an emetic administered immediately, if there be slime and foulness on the tongue; followed by a purgative, if there be signs of congestion in the organs of the abdominal cavity. Five or six grains of calomel, with the same number of grains of James' powder and six or eight of salt of hartshorn in bolus, may be given with a reasonable prospect of doing good, blisters being applied at the same time between the shoulders, to the inside of the thighs, or other part.—If the means now stated be employed to sufficient extent, and applied with discrimination in the proper order of succession, the threatenings of impending disease here alluded to are usually removed. When this is done, things proceed in a smooth and regular train towards a perfect re establishment of health, the effect assured by alternations of warm and cold bathing, exercise in open air, bark, wine and suitable diet.

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Besides the treacherous and malignant condition of the convalescent stage now adverted to, to prevent the recurrence of the dangers of which, a bold and decisive treatment is required, the convalescent from fevers, which arise from a contagious source, or which move under a periodic type, often suffers relapse in about fourteen days, more or less, after the critical termination; especially where he continues to reside within the infected circle, or to inhabit the swampy district where the disease was originally contracted. Whether this relapse be actually a recurrence of the original disease, or a new disease arising from the infection of the

CHAP. V. noxious atmosphere by which the individual is surrounded, it is the duty of the physician to watch the progress of convalescence with care, to examine the condition once a day or oftener, and to act with decision where he discovers the progress to be tardy. The appearance of the tongue, viz. slimy foulness, is generally an index of the returning action of the cause of contagious fever. Where present, an emetic is indicated. This is the means best calculated to counteract the disease in the first steps of its progress:—I may add that experience proves its benefit so satisfactorily that, by means of strong emetics and purgatives opportunely given and repeated according to occasion, especially as aided by ablutions and frequent change of apparel, a person may be often preserved from relapse of contagious fever though he actually live within the walls of an infected dwelling. The appearances of tardy progress in convalescence, or first beginnings of disease are not so visible on the tongue, after the termination of the periodic as they are after the termination of the contagious fever, neither is the emetic and purgative a remedy altogether so decisive in its effect; but still, as the organ of digestion furnishes, in one way or other, the first and surest indications of approaching relapse, emetics and purgatives properly administered are the surest means of averting the contingency, at least of preparing a condition through which it may be averted. The periodic fever has, as already observed, a strong disposition to recur at the interval

of a fortnight from the time it ceased or was artificially suspended. The fact of tendency is ascertained; and it has appeared to myself, in anticipation of it, to be an advisable measure to give an emetic on the twelfth, followed, or not followed at a short interval by a purgative, according to the circumstances of the case. After the purgative, bark, to the quantity of two drachms every third hour on the thirteenth and following day, rarely fails to carry the patient safely past the dangerous period. Warm and cold bathing alternated, exercise in the open air, employment, or occupation; such as, while it exercises the body, also interests the mind, conduce much to the security of convalescence.

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The conditions, now adverted to, relate to the progress of convalescence and prevention of relapse, where the febrile action has actually ceased of its own accord, or where it has been suspended by art. It also happens—and not unfrequently that, instead of cessation, there is only conversion of disease into another form, viz. a form not ostensibly febrile. The forms of conversion are numerous. The history of them does not belong to this place, and I only remark in general that depositions, abscesses and congestions are commonly observed in the organs of the abdominal cavity, where the disease has been treated, during its course, by stimulants, viz. bark, wine and opium without previous evacuation; oedema, leucophlegmasia, &c. where it has been treated solely by antiphlogistics, more especially where the diet, during the convalescence, has been scanty and insipid.

## SECTION II.

*Extra Provisions conducive to Convalescence.*

Having stated cursorily the principal means employed for the prevention of relapse, in so far as the application may be supposed to depend on the medical officer, viz. the exhibition of medicines, the adjustment of diets and all forms of discipline that are attainable within the walls of an hospital, I now advert to those which cannot be obtained without higher authority than that of the physician. The medical establishments of the British army, I regret to add, are deficient in many necessary provisions in most scenes of military service. They are destitute in the West-Indies of many that are essential, viz. that are necessary to save the life of the soldier while sick and under the actual pressure of disease, or that are available in accelerating convalescence and assuring recovery when the course of the disease is arrested. I have experienced the defects in the course of my service, and I consider it to be my duty to say distinctly and publicly what they are. I am aware of what I incur by so doing. The language of naked truth is obnoxious; but it may be useful, and I cannot forego the hope that the case being known, the subject of the soldier's health will be considered, before long, with the attention which it deserves. If it be desirable economy to save military life, the expense of erecting and of equipping hospitals in a proper manner, with the expense of every provision

conducive to the re-establishment of health will, I am confident to maintain, present itself, before the lapse of many years, on the credit side of the account as compared with what now exists, provided the lights of medical science be permitted to lay the plan and to direct the execution in all its details.

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1. It does not belong to this place to enter into a formal discussion on the subject of building hospitals. I only observe that where hospitals are to be built, position and exposure are to be well considered by those who have knowledge to judge the effects of locality. It is essential that the body of the building be wide—the wards not less than thirty or thirty-two feet in the clear, the width farther augmented by a jalousied gallery—of eleven or twelve feet, making in all a roof of fifty-four or fifty six feet. It is proper that the wards, be of different dimensions, viz. some small and secluded for persons in the acute and critical stages of fever, others calculated to receive only two persons, viz. such as are offensive in themselves, or as are past hopes of recovery. It is indispensable that the whole be well ventilated, the windows jalousied, reaching from the ceiling to the floor, made to open as folding doors so that the ventilation be free as if the roof rested only on pillars. It is important that the baths and kitchen be conveniently placed; in short that all the offices be so arranged that every transaction connected with the sick and their treatment may readily fall under the eye of the superintending medical officer. There is no military

Hospitals.

CHAP. hospital in the West Indies that approaches to this  
V. description. The hospital at Barbados is the largest  
in the command. It is supposed to be the best ;  
and, with the additions and alterations that have  
lately been made in it, the wards are comfortable  
and wholesome as wards : it is upon the whole  
incomplete and ill contrived as an hospital. The  
greater number of the receptacles of sick in other  
British islands are defective ; some of them indeed  
are so wretched that the medical officer has not in  
his power to apply the aids of his art with benefit  
to the subjects of his care.\*

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\* It may seem strange that the military establishment in the West-Indies has scarcely yet constructed an hospital for the sick, which gives more than shelter from the weather, and that an hospital should have been erected at Barbados for the sick of the Naval service, not only superior to any British hospital in the West-Indies, but superior in design and arrangement to any hospital perhaps in Great Britain. The position is well chosen, and the parts are so connected with one another as shows clearly that the projector, Admiral Sir Alexander Cochrane, perfectly comprehended what he was doing. There is nothing superfluous; and, except the omission of jalousies for the galleries, little is wanting to render it as commodious as an hospital can be made. The execution does credit to the Admiral's talent and activity : the motive which prompted him to the undertaking marks the benevolence of his character ; the responsibility under which he undertook it marks the boldness of his mind. He did not shrink from doing what he judged to be right and useful in dread of penalty :—he did the good act without the sanction of his superiors, and, according to report, not without their displeasure.

2. It is proved by authentic experience that gestation in the open air, in spring carriages, is not only a remedy of value in certain stages and conditions of fever, but that it is of the first importance in forwarding convalescence in almost all. The fact of the benefit, as within the sphere of common observation and common comprehension, requires no formal illustration from the author. No spring carriages, I have to observe, were provided for the use of the sick and convalescent in the windward and leeward island command in the year 1812; and as there were grounds to believe that many persons, confined to their beds, or to their wards from inability to rise up and walk, languished, sunk and finally died that might have been saved had the means alluded to been at the disposal of the medical officer, an official application was made to the commander of the forces, stating the good that might be derived from such provision, and requesting that one or more carriages, according to the extent of the garrison, might be furnished to each station for the purpose specified. The requisition was not refused as being improper or unnecessary: it was not executed; and I hazard nothing by saying that the chances of recovery, from various forms of disease, were evidently circumscribed in want of this accommodation.

3. Change of place and situation, viz. removal from one island to another, though actually a more healthy one, is often followed by more or less of indisposition in those who are well. Change from

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Change of  
Place.

Spring  
Carriages.

CHAP. one island to another, even to a less healthy one, is often, indeed generally followed by amendment in the health of those who are sick. There are some of the islands in the Charibean chain where periodic fevers—intermittent and remittent, are epidemic to great extent at certain seasons of the year; others, where regular intermittent is scarcely known. There are also some islands, or particular districts in other islands where the dysenteric form of fever chiefly prevails; others, where this form of disease is only of rare occurrence. Further there are islands, or parts in the interior of almost every one of the islands where diseases of any kind are rare, at least rarely dangerous. Impressed with opinion of the benefits which changes of climate judiciously made might operate on the health of troops, the author proposed, in his official report of inspection submitted to the commander of the forces in the year 1812, that convalescent depots should be formed on the healthiest spot of the most healthy of the islands for the benefit of the whole command, viz. one for convalescents from periodic fever, and one for convalescents from the form termed dysentery. It is obvious enough that removals should be made from the islands or districts of islands, where the periodic form prevails, to those where such forms are little known; and from those, where dysenteric affection is common, to such as rarely produce instances of that disease. The proposition, reasonable in itself and obvious to common sense for utility, was not formally negatived: it remained

without execution, which amounts to the same CHAP.  
thing\*. V

4. The removal of persons from one island to another, while under precarious convalescence, has for the most part a decided influence upon recovery. A voyage or cruise at sea, in a vessel properly fitted up for the reception of sick, properly provided with diets and refreshments, and placed under the

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\* Spooner's level, in the island of St. Christopher, was the site recommended on this occasion for the establishment of the depot. The air of the level is cool, pure and refreshing; the locality favourable, as remote from inhabited places where rum, the bane of the British army, is easily procured. The advantage, likely to result to the army from the measure proposed, was not of an equivocal kind: there were even grounds to believe, as strong as can be attained without actual experiment, that had it been adopted, the necessity of sending invalids to Europe for the recovery of health would have no longer existed. The dread of incurring expense, or other cause not known to the author, stood in the way of trial being made of what promised benefit without implying difficulty of execution. It is admitted that, besides the command of a ship to convey the invalid to the depot and to carry back the effective to the regiment, accommodation for the convalescent, quarters for a military officer as superintendant of military discipline, and for a medical officer as a superintendant of the concerns of health, together with offices—cooking place, baths, store-house, &c. were necessary erections. The expense of construction, as to be done by contract, would not have been small, and, as to be done on the ostensible motive of humanity, it would have been deemed a sacrifice. The economy was real: it was not understood, as lying behind a veil which mere money-brokers had not the knowledge, or would not take the trouble to penetrate. If the fear of incurring expense had been the bar to the

CHAP. direction of a skilful medical officer, promises great  
V. advantages. From the trials that had been made

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experiment being made, a small acquaintance, with the capabilities of troops and the nature of the locality, was sufficient to have removed it; for if, instead of a barrack building erected under contract at so much a foot, small huts, with terrace floors, had been deemed suitable for the accommodation of convalescents on Spooner's level, and there are grounds to believe that they are the most suitable, the establishment might have been completed at an expense that scarcely deserves to be named. The mountain in the vicinity of the level furnishes materials for building huts. There is a garrison on Brimstone-hill of healthy soldiers. Soldiers, who are men of common sense, are capable, under the direction of artificers, of constructing places of this description for the habitation of themselves or others, where they are supplied or have the means of supplying themselves with the materials. The wholesomeness of the dwelling is the main object in view in the present case; and, as it is plain that, in order to be wholesome, it must be secured from the damp which, arising from the earth, ascends by the walls as by a conductor, it ought to be erected upon pillars, so as to be thoroughly ventilated underneath: if that be not done, it ought to be erected upon an elevated terrace floor, guarded from chances of inundation, in the event of heavy rains, by a proper disposition of exterior drains. If this had been done, the convalescent would have been well lodged in so far as respects quarters; and, as removed to a new scene, new chances of speedy convalescence would have been opened to him. A change, simply as change, does something; a change to a cool and pure mountain air, as augmented by the resemblance which most British soldiers would find in the projected hut to the abode of their youthful years, would have done a great deal. To the soldier, whose nights and days have been passed in a crowded barrack, amid noise, bustle and confusion, the retreat to the hut and narrow circle of friends, in a sequestered vale like

of cruising at sea for the benefit of health, sufficient conviction was impressed on the mind of the author

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Spooner's level, might naturally enough be supposed to be accompanied with sensations not unlike those which arise at release from a prison, or at emancipation from the shackles of a court to the unsophisticated liberty of a country life.—If the measure proposed had been adopted, the convalescence of the invalid would, it is presumed, have been forwarded by permission being given to those who were able to roam among the woods with or without the firelock. It is necessary that they be interdicted from intercourse with the plantations on the plain, that they be guarded from moral transgression with every care: it will be useful that otherwise they be emancipated from restraint, allowed almost to forget that they belong to the army. The taste of freedom, obtained during this furlough, might be expected in most cases to invigorate the mental power, even to exalt the man to a higher condition of existence. I may venture to say that the greater number of British soldiers, so treated, would return to their regiments, not only with health restored, but with a comparatively high tone of mind, and a comparatively high sense of moral duty. In solitude among woods and mountains, particularly in tropical climates where the majesty of nature is commanding, the man must be less than man who is not impressed with sensibility towards the author of a stupendous creation, and whose thoughts are not raised, under that impression, to something beyond himself. The feeling, thus produced, is genuine religion,—a sentiment generated by gratitude, and exalted to adoration by contemplation of purity: identified with existence, it constitutes the base of happiness, and becomes, in fact, the only sure bond of good conduct among men, either in peace or war. In this view, a furlough among the mountains, as presenting the means of opening the mind to the contemplation of the most stable good in human life, promised to be of inestimable value to the military, independently of its good effects upon the bodily health of the invalid.

CHAP. V. that a large and well appointed vessel, placed under his orders and employed to cruise with invalids in different latitudes as his judgment might direct, would, in all probability, furnish the means of saving from death, and even of restoring to effective service a considerable number of persons who, as the case now is, inevitably perish. A vessel of this description was therefore included among the requisitions, submitted to the commander of the forces, in the year 1812, on account of the medical department of the windward and leeward island command. It met the same fate as the preceding.

The comparative return, No. 1, annexed to this sketch, shows very distinctly that mortality among British European troops has diminished considerably since the year 1812; it shows moreover that the diminution has been more considerable at Barbados than at any other station in the command. The difference, it is presumed was owing partly to the advantages of hospital accommodation, partly to more prompt attention to commencing disease than obtained at most other places. The average mortality at Barbados, during the years 1812, 1813, and 1814, compared with the average mortality of the nine preceding years, appears to have decreased by nearly two-thirds of the total amount; and, great as the reduction actually was, there is reason to believe that had spring carriages, convalescent hospitals in the healthiest parts of the more healthy of the islands, with vessels, properly appointed and suitably equipped for convalescents to cruise at sea,

been placed at the disposal of the chief medical officer, it might have been farther reduced—probably by not less than one-third. The truth of this opinion, which is supported by facts of fair inference, seemed to myself to be so important that it was submitted to the consideration of the medical board in England, to the commander of the forces in the West-Indies, and even to the commander in chief. From the manner in which it has been stated, it deserves to be rigidly investigated. It is of consequence to be ascertained; for, if after a just investigation, the assumption turn out to be well founded, the dread of the climate of the West-Indies may be dismissed from the minds of the military, provided the government do every thing that may be done. As the case now stands, the medical officer has the power of arresting the course of fever in vigorous subjects of sound natural constitution; he is destitute of the means of conducting to health, through a tedious convalescence, such as have been debilitated and constitutionally injured by its effects.

The mortality which occurs among troops during service in the West-Indies has often alarmed the British nation, the dread of climate operating to such extent on some occasions as in a manner to suspend the progress of recruiting, even to induce officers to resign their commissions rather than to take their chances of service in that country. The subject, important in various points of view, deserves national attention; and, with that view, a motion was sub-

CHAP. V. mitted to the House of Commons in the year 1807, strongly urging to a consideration of it. The motion was made by a person who was locally acquainted with the West-Indies, who had been a civil governor, who had held a military command in that country, and who was besides a man of discernment and knowledge beyond the common class. The subject was discussed; and, after discussion, the motion was withdrawn, the then minister of war maintaining in the face of strong appearances, that there were no grounds for interference,—stating confidently that such measures had been taken, and such things had been done, that mortality was already reduced, (I think by one-third,) and, adding exultingly that nothing should be left undone until the enemy, as he pleased to call him—disease and death, was driven from his last hold; or rodomontade to that effect. The House was satisfied with the assurance. The annexed return, No. 1, which is an official document, may probably be thought to show that the House was too easily satisfied. Disease prevailed, and death held his dominion after the year 1807; while the reports of inspection of hospitals and barracks submitted by the author to the commander of the Forces in the years 1812 and 1813, as well as the subsequent reports of Dr. Ferguson, inspector of hospitals, are conclusive in proof that little had been done to dispossess him. Even now with all the fact and argument that is before the official authorities, there are no grounds to believe that the Lords of the Council will be induced to

make an experiment for the sake of ascertaining whether or not it be possible to preserve the health of the military by enquiring into the nature of localities and modes of constructing quarters; or, to diminish the ravages of disease, by constructing and equipping hospitals in such manner that the medical officer may be enabled to do his duty to the sick to the full extent of his knowledge.

It may seem to be irrelevant to the subject of this work, and not decorous to speak in this manner. The language I confess is not sufficiently measured for a humble man; but I must beg to say, at the same time, that it does not proceed from insolence. It is wrung from me reluctantly in recollection of the miseries which I have seen in the course of my official duties. The preservation of the health and lives of soldiers is a national concern. It belongs to a physician's profession, and it has been the author's express office to study the subject; that is, to investigate the nature of the causes which act upon the health of this description of people—to note and appreciate the power of their effects with his best ability. The official statements made by him on this subject have been made in all cases without reserve. They have not been made with exaggeration, or with stronger showing than the case demanded. It is left for others to determine, after what is said in the appendix has been considered, whether they have been made with knowledge, or whether those who have delayed to apply the remedies there suggested have been indifferent to their duty.

CHAP. I say this unwillingly ; but I say it in conscience ;  
V. for I consider it to be incumbent on me to express  
explicitly on this occasion that there is sufficient  
evidence, in the history of military service, that  
European troops may be so stationed in the greater  
number of the islands in the West-Indies as to  
suffer little from sickness ; and that there is more-  
over evidence in the history of hospitals, that the  
medical art is an art of value, and may be applied  
in such manner as to reduce mortality from sickness,  
when it does occur, to comparative insignificance.  
Much I am convinced may be done : nothing I am  
aware can be done, until science—not contingency  
called expedience, direct the business of the state.—  
When that may happen I do not pretend to foretel ;  
for science, as appears in the history of mankind,  
is not often permitted to associate with power.

| Year.                | Station.     | Comparative Return of Deaths. |             |       |          | Annual Proportion of Deaths to the Number discharged. |             |       |          | Annual Proportion of Deaths to the Number of Troops. |             |       |          | Annual Proportion of Deaths to the Number of Troops. |             |       |          |    |
|----------------------|--------------|-------------------------------|-------------|-------|----------|-------------------------------------------------------|-------------|-------|----------|------------------------------------------------------|-------------|-------|----------|------------------------------------------------------|-------------|-------|----------|----|
|                      |              | Admitted.                     | Discharged. | Dead. | Wounded. | Admitted.                                             | Discharged. | Dead. | Wounded. | Admitted.                                            | Discharged. | Dead. | Wounded. | Admitted.                                            | Discharged. | Dead. | Wounded. |    |
| 1802                 | Bahamas, &c. | 2600                          | 880         | 116   | 174      | 1                                                     | 10          | 39    | 1        | 10                                                   | 53          | 10    | 50       | 1                                                    | 10          | 51    | 1        | 10 |
| Dominica, &c.        | 1000         | 300                           | 489         | 91    | 87       | 1                                                     | 10          | 27    | 1        | 10                                                   | 44          | 10    | 44       | 1                                                    | 10          | 43    | 1        | 10 |
| Grenada, &c.         | 200          | 60                            | 22          | 50    | 57       | 1                                                     | 10          | 22    | 1        | 10                                                   | 29          | 10    | 29       | 1                                                    | 10          | 28    | 1        | 10 |
| Antigua, &c.         | 150          | 50                            | 45          | 51    | 57       | 1                                                     | 10          | 41    | 1        | 10                                                   | 104         | 10    | 104      | 1                                                    | 10          | 103   | 1        | 10 |
| Tobago, &c.          | 100          | 30                            | 30          | 30    | 37       | 1                                                     | 10          | 31    | 1        | 10                                                   | 31          | 10    | 31       | 1                                                    | 10          | 30    | 1        | 10 |
| Saint Lucia, &c.     | 100          | 30                            | 30          | 30    | 36       | 1                                                     | 10          | 30    | 1        | 10                                                   | 30          | 10    | 30       | 1                                                    | 10          | 29    | 1        | 10 |
| Trinidad, &c.        | 100          | 30                            | 104         | 100   | 106      | 1                                                     | 10          | 27    | 1        | 10                                                   | 104         | 10    | 104      | 1                                                    | 10          | 103   | 1        | 10 |
| St. Vincent, &c.     | 100          | 30                            | 104         | 100   | 106      | 1                                                     | 10          | 27    | 1        | 10                                                   | 104         | 10    | 104      | 1                                                    | 10          | 103   | 1        | 10 |
| Leeward Islands, &c. | 250          | 75                            | 120         | 120   | 125      | 1                                                     | 10          | 125   | 1        | 10                                                   | 225         | 10    | 225      | 1                                                    | 10          | 224   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 907         | 134   | 807      | 1                                                     | 10          | 111   | 1        | 10                                                   | 277         | 10    | 277      | 1                                                    | 10          | 276   | 1        | 10 |
| Bahamas, &c.         | 470          | 150                           | 400         | 260   | 369      | 1                                                     | 10          | 8     | 1        | 10                                                   | 121         | 10    | 121      | 1                                                    | 10          | 120   | 1        | 10 |
| Dominica, &c.        | 200          | 70                            | 172         | 160   | 247      | 1                                                     | 10          | 10    | 1        | 10                                                   | 171         | 10    | 171      | 1                                                    | 10          | 170   | 1        | 10 |
| Grenada, &c.         | 40           | 10                            | 40          | 35    | 47       | 1                                                     | 10          | 10    | 1        | 10                                                   | 42          | 10    | 42       | 1                                                    | 10          | 41    | 1        | 10 |
| Antigua, &c.         | 40           | 10                            | 40          | 35    | 47       | 1                                                     | 10          | 10    | 1        | 10                                                   | 42          | 10    | 42       | 1                                                    | 10          | 41    | 1        | 10 |
| Tobago, &c.          | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Saint Lucia, &c.     | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Trinidad, &c.        | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Saint Vincent, &c.   | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 104         | 100   | 106      | 1                                                     | 10          | 27    | 1        | 10                                                   | 104         | 10    | 104      | 1                                                    | 10          | 103   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Tobago, &c.          | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Lucia, &c.     | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Trinidad, &c.        | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Saint Vincent, &c.   | 10           | 3                             | 10          | 9     | 12       | 1                                                     | 10          | 10    | 1        | 10                                                   | 11          | 10    | 11       | 1                                                    | 10          | 10    | 1        | 10 |
| Leeward Islands, &c. | 100          | 30                            | 100         | 90    | 102      | 1                                                     | 10          | 10    | 1        | 10                                                   | 102         | 10    | 102      | 1                                                    | 10          | 101   | 1        | 10 |
| Bahamas, &c.         | 1000         | 300                           | 1000        | 900   | 1000     | 1                                                     | 10          | 10    | 1        | 10                                                   | 1000        | 10    | 1000     | 1                                                    | 10          | 999   | 1        | 10 |
| Bahamas, &c.         | 200          | 70                            | 200         | 180   | 220      | 1                                                     | 10          | 20    | 1        | 10                                                   | 22          | 10    | 22       | 1                                                    | 10          | 21    | 1        | 10 |
| Dominica, &c.        | 100          | 30                            | 100         | 90    | 100      | 1                                                     | 10          | 10    | 1        | 10                                                   | 100         | 10    | 100      | 1                                                    | 10          | 99    | 1        | 10 |
| Grenada, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    | 1        | 10                                                   | 21          | 10    | 21       | 1                                                    | 10          | 20    | 1        | 10 |
| Antigua, &c.         | 20           | 5                             | 20          | 15    | 27       | 1                                                     | 10          | 10    |          |                                                      |             |       |          |                                                      |             |       |          |    |

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## NOTE TO TABLE I.

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CORRECT returns of the sick of armies or other classes of the community, continued through a series of years, cannot be otherwise regarded than as documents of importance. They not only afford information to physicians on the subject of health and disease and relative mortality among diseases, but they supply materials of great and accurate value for the calculations of statesmen and generals, whether the calculation relate to productive domestic labour, or destructive foreign war. The annexed return, No. 1, comprehends a period of twelve years of hospital record in the Windward and Leeward island station; the first nine under the superintendence of four different inspectors, three of whom are still living; the last three under that of the author. Fever, in one form or other, was the reigning malady throughout. The manner of conducting the cure of it fluctuated variously between the years 1803 and 1812. I do not pretend to know accurately the limits and degrees of the fluctuations; nor can I form distinct opinion concerning the effect produced by the different modes of treatment then pursued. The practice was directed at one time through stimulation—the means, wine, opium, high measure of diet, bark and other tonics; at another, through evacuations—the means, emetics, purgatives or diaphoretics; at a third, through subtraction of heat—the means, application of cold, viz. affusion of cold water on the naked body; and, at a fourth, (upon the whole the most extended and general,) through what may be termed substitution, viz. substitution of mercurial action for the action of fever. Such is the outline of the differences of practice which obtained in the hospitals during the period allu-

ded to in so far as I have been able to ascertain it, by examining the case books which are still preserved at Barbados in the office of the Inspector of hospitals for the Windward and Lee-ward island station. I conclude that the means prescribed, during this period, were prescribed with consideration according to the view which obtained at the time: I have grounds to believe that they were applied with care, and generally administered under a rule of strict economy. The deaths, in proportion to the number of the sick, were more numerous, as appears by the returns, in one year than in another; at one station than in another; and in one corps than in another: the differences of effect, under these differing conditions, are not so characterized that it can be safely said in what degree they were connected with the different modes of treatment then employed. It cannot be said positively, whether stimulation or depletion, subtraction of heat by affusion of cold water, or salivation produced by the action of mercury were the most successful means of curing fever. This we may venture to say that, from the general uniformity, or mere contingent variation in the result during the different years of the period under view, no system of treatment was discovered, at least generally enforced, which could be considered as commanding.—The benefit derived from the abstraction of blood, in the cure of tropical fevers, was known to many army surgeons long before the year 1812. Bleeding was actually carried to considerable extent by some of them in the first nine years of the return annexed: it was not adopted as a general remedy, nor was it so adjusted, where adopted, as to produce any striking change in the general return of dead. The practice was introduced with advantages in the year 1812; and it was more generally adhered to from that time until the year 1815 than it ever had been in the West-Indies, or perhaps in any part of the British dominions, more especially among the regimental surgeons who belonged to the garrison of Barbados, which was then the head quarters of the army.

The person who receives the commission of regimental surgeon is supposed to be competent to the discharge of his duty in all its latitude; consequently the army physician, or the in-

spector of hospitals who superintends the medical concerns of the military, is not, or does not conceive himself to be authorized to offer professional instruction with regard to the treatment of ordinary diseases. It would be deemed arrogant and presumptuous to attempt it: it would not be beneficial to the service to enforce it. But, though the inspector of hospitals be not authorized, by commission, to dictate what is to be done in the way of medical treatment, he is authorized, or rather obliged by the nature of his office to exact an account of what is done, medically as well as economically, from the officers of all the hospitals which are placed within his station.

The professional opinions of the author of this work, though not very current, are before the public. They are said to be peculiar and obscure, and are therefore little studied. The author believes them to be true; and, if understood, he confidently believes they might be useful to the practitioner. He had no authority from commission; and, notwithstanding the predilection which a man naturally has for that which belongs to himself, he felt no inclination, from other motive, to enforce attention to them through any other influence than what they might owe to their merits. The medical mind may be enlightened; but it must find the light by its own observation, and digest the observation by its own reflection in order to make it available: knowledge cannot be infused by word of command. Impressed with this idea, the writer of the present sketch abstained from offering medical suggestions to the medical officers who were placed under his superintendence in the Windward and Leeward island station at the commencement of the year 1812, trusting to time and chance for the opportunity of bringing under their notice the material of the evidences upon which he had himself formed his opinions, and which he believed might so operate as, in process of time, to influence the opinions of others. It is within the authority of Inspector of hospitals to order that the histories of the more important cases of disease be carefully taken down by regimental surgeons, and that the remedies prescribed, the conditions under which they are prescribed, with the visible effects which they produce on

the condition of the disease, be correctly recorded for the Inspector's information. This, as comprehended in the Inspector's duty, was ordered to be done; and, it was moreover ordered that, in the event of the disease terminating fatally, the body should be opened, the appearances observed on dissection noted, added to the history of the case, and transmitted to Barbados with the monthly return. The regulation alluded to, (which was issued and sent to the different stations at an early period in the year 1812,) opened a precise professional field for observation, implying at the same time as high a degree of responsibility from the regimental surgeon as could be contrived or exacted from a medical officer. The injunctions given, I have the satisfaction to say were attended to; and I have reason to believe that some change was introduced into the then prevailing method of treating febrile diseases from the lights thence derived, without doing violence to opinion through any other means than convictions arising from the reflections of the individual himself. The regimental surgeon had here the opportunity of seeing, in the dissection of the dead body, the ravages committed on organic structure by diseased action; and it may be reasonably supposed that, instructed by the example of what he saw, he sometimes gained knowledge; or was led, by reflecting on the materials which were placed before him, to such a view of principle as might safely form a basis for his future professional proceeding.

The comparative return, No. 1, though not without usefulness, is not fully instructive as a medical return. It gives no more than a general view of results, viz. proportion between discharges and deaths, with the amount of the decrease by death in the strength of the military force, in the different stations and in the whole command during a given period of time. The amount of the mortality, as appears by the return, sunk considerably in the European part of the force through the whole of the Windward and Leeward island station during the last three years of the return. It sunk more remarkably at Barbados than at any other; and, remarkably as it was reduced at that place, there are grounds to believe that it might have

been reduced still farther, if the chief medical officer had possessed the power of commanding, for the department, every thing that was necessary to forward convalescence and assure stability of recovery. But, while decrease in the amount of mortality is conspicuous in the latter years in the European force, the same fortunate change is not visible in the African. In the earlier period of the return, No. 1, sickness among the black troops appears to have been trifling, and mortality was on a very low scale; in the latter period, the quantity of sickness increased; the proportion of deaths to discharges is high; the annual loss of the strength by death formidable. The fact stands on record; and, as such a result was not to be expected from the boasted improvements of the economical arrangements of the present day, it would not be unworthy of the consideration of the higher powers of the state to institute an enquiry into the cause of it. The difference is striking. It cannot exist without a cause of moment; and it cannot, at least it ought not to be passed over without investigation. I cannot speak, from actual knowledge, of the physical qualities of the persons who filled the ranks of the black regiments of the earlier periods of the annexed return: difference of loss, by disease, gives ground to believe that they were different from those of the present. The black recruits, admitted into the lists of the army between the years 1812 and 1815, fell under my personal observation. I am free to say that a small portion of them only were such as I would have selected for soldiers. Some of them were collected in Africa by an officer expressly appointed for the purpose of recruiting: they did not appear to have been well chosen—and they were but few in number. The majority of those entered on the military list, during the period to which my knowledge extends, where prize negroes, plundered or purchased as slave cargoes on the coasts of Africa by Spaniards, Portuguese, or others. They were intercepted on the passage to their destinations by the cruisers of the British Navy, carried into British ports, tried in British courts, condemned as contraband, and, when condemned, sold wholesale by the captors to the British government for soldiers. They were thus of all ages as cargoes

of slave ships usually are; at least from seven years of age to forty or upwards—and, as such, they could not all be supposed to be fit subjects to carry arms.

I am not acquainted with all the arrangements which relate to the recruiting of the black corps, and I am unwilling to misrepresent them: what is now stated is ostensible. The government will, it is to be hoped, consider the subject in all its bearings; for the mode of filling the ranks of this description of force is not, as it strikes the ordinary observer, a measure that is well considered. In one view, there is waste of money in purchasing a commodity which cannot be available for its purposes in less than five or six years, even sometimes more; and in another, and still a more important one, there is an apparent violation of the act of the legislature which has been employed to blazon British justice and humanity in all parts of the world. As the case stands at present, whatever may be said of it, the African, liberated from the hoe with one hand, is chained to the firelock with the other—for life, and without option of choice. The act is deemed gracious, and in courtly phrase, it is termed emancipation; it is an act of force in reality, and, translated into plain English, it amounts to no more than spoiling the robber and appropriating the spoils.

(Table II)

ABSTRACT OF MONTHLY RETURNS OF THE SICK OF THE TROOPS—EUROPEAN AND AFRICAN, WHO COMPOSED  
THE GARRISON OF BARBADOS IN THE YEAR 1811.

| DESCRIPTION             | STATE ON THE 20th OF THE MONTH.         |                             |         |      |        |           |          |          |            |          | MOVEMENT DURING THE MONTH. |          |            |          |            |          |            |          |            |          |      |     |    |
|-------------------------|-----------------------------------------|-----------------------------|---------|------|--------|-----------|----------|----------|------------|----------|----------------------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------|-----|----|
|                         | State on<br>20th of<br>Month            | Principal Forms of Disease. |         |      |        |           |          |          |            |          | Discharged                 | Diseased | Discharged | Diseased | Discharged | Diseased | Discharged | Diseased | Discharged | Diseased |      |     |    |
|                         |                                         | Pneum.                      | Dysent. | Pus. | Hepat. | Rheumatic | Oculitis | Cochlear | Discharged | Diseased |                            |          |            |          |            |          |            |          |            |          |      |     |    |
| Jan. 20th.              | 2d Battalion, 60th Regiment Detachments | 1092                        | 62      | 3    | 24     | 7         | 1        | —        | 10         | 1        | 9                          | 4        | 37         | 5        | 4          | —        | 1          | —        | 1          | 100      | 10   |     |    |
|                         | Total European                          | 881                         | 93      | 9    | 26     | 7         | 1        | —        | 21         | 7        | 19                         | 3        | 40         | 6        | —          | —        | —          | —        | 1          | 102      | 6    |     |    |
| Feb. 20th.              | 6th W. I. Regiment, African             | 1963                        | 157     | 12   | 52     | 14        | —        | 2        | 31         | 8        | 28                         | 7        | 77         | 5        | 10         | —        | 1          | —        | 4          | 2        | 202  | 15  |    |
|                         | 2d Battalion, 60th Regiment Detachments | 1510                        | 29      | 17   | 48     | 19        | 1        | 3        | 16         | 4        | 14                         | 1        | 55         | —        | 5          | 3        | —          | —        | 2          | 1        | 76   | 5   |    |
| March 20th.             | Total European                          | 2600                        | 240     | 26   | 65     | 26        | 1        | 4        | 27         | 5        | 31                         | 8        | 73         | 11       | 12         | —        | 1          | —        | 3          | 1        | 251  | 22  |    |
|                         | 6th W. I. Regiment, African             | 666                         | 21      | 3    | 6      | 3         | —        | —        | 6          | —        | 12                         | —        | 14         | 4        | 5          | 3        | —          | —        | —          | —        | 50   | 8   |    |
| April 20th.             | 2d Battalion, 60th Regiment Detachments | 1074                        | 74      | 11   | 18     | 3         | 1        | 1        | 10         | 2        | 24                         | 5        | 29         | 1        | 13         | 3        | —          | —        | —          | —        | 100  | 9   |    |
|                         | Total European                          | 935                         | 176     | 23   | 66     | 11        | 1        | 1        | 24         | 9        | 17                         | 6        | 43         | 6        | 9          | —        | 1          | —        | —          | 1        | 145  | 11  |    |
| May 20th.               | 6th W. I. Regiment, African             | 2009                        | 250     | 33   | 84     | 14        | 2        | 2        | 34         | 11       | 41                         | 10       | 78         | 6        | 22         | 3        | 1          | —        | —          | 1        | 245  | 20  |    |
|                         | 2d Battalion, 60th Regiment Detachments | 658                         | 34      | 1    | 7      | 6         | —        | —        | 7          | —        | 6                          | —        | 10         | —        | 4          | 1        | —          | —        | —          | —        | 39   | 1   |    |
| June 20th.              | Total European                          | 1055                        | 69      | 16   | 16     | 4         | 1        | 1        | 5          | 2        | 26                         | 6        | 30         | 5        | 7          | —        | 1          | 1        | —          | 1        | 140  | 11  |    |
|                         | 6th W. I. Regiment, African             | 939                         | 161     | 26   | 56     | 15        | 1        | 1        | 13         | 14       | 44                         | 15       | 86         | 5        | 14         | 1        | 1          | —        | 4          | 1        | 213  | 25  |    |
| July 20th.              | 2d Battalion, 60th Regiment Detachments | 1038                        | 71      | 23   | 19     | 1         | 1        | 2        | 11         | 1        | 56                         | 9        | 28         | 3        | 6          | —        | 1          | —        | 1          | —        | 137  | 15  |    |
|                         | Total European                          | 785                         | 102     | 22   | 36     | 8         | 1        | 2        | 12         | 5        | 59                         | 13       | 50         | 4        | 11         | 2        | —          | 1        | 8          | —        | 207  | 19  |    |
| Aug. 20th.              | 6th W. I. Regiment, African             | 1624                        | 175     | 45   | 57     | 9         | 2        | 4        | 23         | 6        | 115                        | 22       | 28         | 7        | 17         | 4        | 1          | —        | 9          | —        | 344  | 34  |    |
|                         | 2d Battalion, 60th Regiment Detachments | 650                         | 27      | 4    | 6      | 2         | —        | —        | 4          | 1        | 16                         | 1        | 15         | 2        | 0          | —        | —          | —        | —          | 67       | 6    |     |    |
| Sept. 20th.             | Total European                          | 1007                        | 65      | 22   | 18     | 1         | 1        | —        | 8          | 1        | 53                         | 21       | 36         | 6        | —          | —        | 1          | —        | 3          | 1        | 165  | 27  |    |
|                         | 6th W. I. Regiment, African             | 758                         | 110     | 24   | 55     | 4         | —        | —        | 11         | 2        | 63                         | 17       | 65         | 9        | 11         | —        | 1          | —        | —          | 1        | 148  | 28  |    |
| Oct. 20th.              | 2d Battalion, 60th Regiment Detachments | 1765                        | 175     | 46   | 73     | 6         | 1        | 2        | 19         | 3        | 106                        | 38       | 101        | 15       | 11         | —        | —          | 1        | 2          | 4        | 1    | 313 | 55 |
|                         | Total European                          | 781                         | 36      | 6    | 11     | 7         | —        | —        | 5          | 1        | 13                         | —        | 14         | 2        | —          | —        | —          | 1        | —          | 1        | 30   | 2   |    |
| Nov. 20th.              | 2d Battalion, 60th Regiment Detachments | 993                         | 81      | 28   | 24     | 2         | —        | —        | 11         | 1        | 39                         | 6        | 15         | 2        | 1          | 1        | 4          | —        | 1          | —        | 99   | 10  |    |
|                         | Total European                          | 717                         | 119     | 33   | 48     | 4         | —        | —        | 6          | 12       | 40                         | 15       | 47         | 7        | 1          | —        | —          | —        | —          | —        | 115  | 20  |    |
| Dec. 20th.              | 6th W. I. Regiment, African             | 1710                        | 200     | 61   | 72     | 6         | —        | 6        | 23         | 8        | 84                         | 19       | 62         | 9        | 2          | 1        | 4          | —        | 1          | —        | 214  | 30  |    |
|                         | 2d Battalion, 60th Regiment Detachments | 857                         | 36      | 5    | 8      | 4         | —        | —        | 11         | 4        | 14                         | —        | 24         | 1        | 4          | —        | —          | —        | —          | 61       | 3    |     |    |
| Jan. 20th.              | Total European                          | 992                         | 87      | 22   | 30     | 3         | —        | 2        | 16         | —        | 32                         | 2        | 25         | 1        | 1          | —        | —          | 1        | —          | —        | 110  | 3   |    |
|                         | 6th W. I. Regiment, African             | 716                         | 92      | 23   | 35     | 4         | 3        | —        | 11         | 6        | 41                         | 5        | 49         | 3        | 2          | —        | 1          | —        | —          | —        | 133  | 9   |    |
| Feb. 20th.              | 2d Battalion, 60th Regiment Detachments | 1708                        | 179     | 45   | 65     | 7         | 3        | 2        | 26         | 6        | 73                         | 5        | 74         | 4        | 3          | —        | 1          | 3        | —          | —        | 243  | 12  |    |
|                         | Total European                          | 853                         | 29      | 7    | 11     | 2         | —        | —        | 5          | 2        | 11                         | 1        | 11         | 2        | —          | —        | 1          | —        | —          | —        | 51   | 4   |    |
| Mar. 20th.              | 6th W. I. Regiment, African             | 983                         | 69      | 11   | 32     | 3         | —        | —        | 9          | —        | 30                         | 1        | 31         | 6        | 1          | —        | 1          | —        | 4          | 2        | 119  | 9   |    |
|                         | 2d Battalion, 60th Regiment Detachments | 850                         | 30      | 2    | 12     | 1         | —        | —        | 7          | 2        | 53                         | 2        | 73         | 10       | 3          | 2        | 1          | 1        | —          | 6        | 222  | 16  |    |
| Apr. 20th.              | Total European                          | 1095                        | 154     | 50   | 69     | 8         | —        | 2        | 18         | 6        | 53                         | 2        | 73         | 10       | 3          | 2        | 1          | 1        | —          | 4        | 42   | 4   |    |
|                         | 6th W. I. Regiment, African             | 722                         | 83      | 10   | 46     | 7         | —        | —        | 9          | 7        | 6                          | 21       | —          | 38       | 1          | 2        | —          | —        | —          | —        | 85   | 2   |    |
| May 20th.               | 2d Battalion, 60th Regiment Detachments | 973                         | 56      | 16   | 25     | 1         | —        | —        | 6          | 1        | 22                         | 1        | 28         | 3        | 1          | —        | —          | —        | —          | —        | 86   | 7   |    |
|                         | Total European                          | 843                         | 15      | 1    | 5      | 3         | —        | —        | 5          | —        | 2                          | 1        | 17         | 4        | 1          | —        | —          | —        | —          | —        | 42   | 6   |    |
| Jun. 20th.              | 6th W. I. Regiment, African             | 1695                        | 139     | 20   | 71     | 8         | —        | 2        | 15         | 7        | 43                         | 1        | 67         | 4        | 3          | 2        | 1          | 1        | —          | —        | 171  | 9   |    |
|                         | 2d Battalion, 60th Regiment Detachments | 722                         | 83      | 10   | 42     | 5         | —        | —        | 1          | 9        | 21                         | 1        | 41         | 5        | 2          | —        | 1          | —        | —          | —        | 42   | 6   |    |
| Jul. 20th.              | Total European                          | 1676                        | 145     | 41   | 65     | 7         | —        | 2        | 16         | —        | 42                         | 2        | 80         | 7        | 2          | 1        | —          | 1        | 4          | 4        | 179  | 14  |    |
|                         | 6th W. I. Regiment, African             | 842                         | 21      | 1    | 5      | 3         | —        | —        | 4          | —        | 1                          | —        | 12         | 3        | 2          | —        | 1          | —        | —          | —        | 51   | 2   |    |
| Aug. 20th.              | 2d Battalion, 60th Regiment Detachments | 970                         | 64      | 20   | 26     | 9         | —        | 1        | 7          | —        | 21                         | 1        | 39         | 2        | 1          | —        | 1          | —        | 3          | 4        | 81   | 3   |    |
|                         | Total European                          | 705                         | 81      | 21   | 42     | 5         | —        | —        | 1          | 9        | 21                         | 1        | 41         | 5        | 2          | —        | 1          | —        | —          | —        | 42   | 6   |    |
| Sep. 20th.              | 6th W. I. Regiment, African             | 1696                        | 142     | 13   | 14     | 1         | —        | 1        | 8          | —        | 49                         | —        | 52         | 4        | 1          | —        | 1          | —        | —          | —        | 125  | 4   |    |
|                         | 2d Battalion, 60th Regiment Detachments | 719                         | 69      | 12   | 27     | 9         | —        | 2        | 7          | 1        | 29                         | 5        | 60         | —        | 3          | 2        | 6          | —        | —          | —        | 112  | 6   |    |
| Oct. 20th.              | Total European                          | 1685                        | 111     | 25   | 41     | 10        | —        | 3        | 15         | 1        | 78                         | 5        | 92         | 4        | 4          | 1        | —          | —        | —          | —        | 237  | 10  |    |
|                         | 6th W. I. Regiment, African             | 837                         | 13      | 1    | 3      | 1         | —        | —        | 3          | —        | 2                          | 1        | 14         | 2        | 6          | 2        | —          | —        | —          | —        | 34   | 5   |    |
| Total European, 1811 .. |                                         | 764                         |         |      |        |           |          |          |            |          |                            | 141      | 967        | 92       | 110        | 17       | 16         | —        | 55         | 14       | 2964 | 271 |    |
| Total African, 1811 ..  |                                         | 102                         |         |      |        |           |          |          |            |          |                            | 5        | 189        | 21       | 51         | 19       | 16         | —        | 4          | —        | 587  | 50  |    |



## NOTE TO TABLE II.

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THE strength of the different corps comprehends rank and file and non-commissioned officers, viz. all persons who, when sick, are received into hospitals. The strength of the troops in garrison is given as it stands on the 20th of every month; the amount of the sick list and the proportion which the principal forms of disease bear to the sick answer to that date. Accidents and complaints which lead to no consequence, though included in the gross list of sick, are not included in the detail—an omission which explains the want of correspondence between the figures of the state and movement; it is done with a view to avoid the multiplying of columns of no useful inference. It is thus that the principal forms only are extended in detail, viz. such as may be supposed to depend upon the action of a general cause, whether in its primary or secondary stage of action. The cachectic column of this return includes all forms of chronic or degenerated disease, viz. dropsy, obstructed viscera or what is termed debility, &c.—The second battalion of the 60th regiment, being an entire corps, stands in a line by itself; the other troops in garrison, including the Artillery, are comprehended under the head of detachment.—The African corps has a line for itself.

The proportion of the European sick to the total European strength stands, for the year 1811, as one to ten; the proportion of febrile forms to the total sick list, as one to five nearly; of dysenteric, as one to two and six-sevenths; of pneumonic, as one to eighteen and a half; of hepatic, as one to two hundred and thirty-six; of rheumatic, as one to sixty-eight and a half; of ulcerative, as one to eight; of cachectic, as one to

twenty-seven and two-thirds.—The proportion of deaths to discharges from febrile forms stands, as one to six and one-third; from dysenteric, as one to eleven and a half; from pneumonic, as one to seven and one-third; from hepatic, as one to sixteen; from cachectic, as one to three and a half; from the whole, as one to eleven and two-thirds; the annual loss of the strength, as one to six and five-sixths.

The proportion of the African sick stands, to the total African strength, as one to thirty-two; the proportion of febrile forms to the total sick list, as one to ten; of dysenteric, as one to three and one-third; of pneumonic, as one to seventeen and two-thirds; of rheumatic, as one to one hundred and two; of ulcerative, as one to four and one-third; of cachectic, as one to thirty-one.—The proportion of deaths to discharges from febrile forms stands, as one to twenty-one; from dysenteric, as one to ten; from pneumonic, as one to three and a half; from cachectic, as one to four; from the whole, as one to twelve and two-thirds; the annual loss of the strength, as one to seventeen nearly.

(Table III)

ABSTRACT OF MONTHLY RETURNS OF THE SICK OF THE TROOPS—EUROPEAN AND AFRICAN, WHO COMPOSED  
THE GARRISON OF BARBADOS IN THE YEAR 1814.

| DESCRIPTION.                                                                                    | STATE ON THE 20th OF THE MONTH. |         |                             |         |                             |               |             |           |          |         |          | MOVEMENT DURING THE MONTH. |         |           |         |          |         |           |         |          |         |           |         |
|-------------------------------------------------------------------------------------------------|---------------------------------|---------|-----------------------------|---------|-----------------------------|---------------|-------------|-----------|----------|---------|----------|----------------------------|---------|-----------|---------|----------|---------|-----------|---------|----------|---------|-----------|---------|
|                                                                                                 | Strength,                       |         | Amount of the<br>Sick List. |         | Principal Forms of Disease. |               |             |           |          |         |          | Arrived.                   |         | Departed. |         | Arrived. |         | Departed. |         | Arrived. |         | Departed. |         |
|                                                                                                 | Present.                        | Absent. | Present.                    | Absent. | Hospital.                   | Convalescent. | Recoveries. | Deceased. | Present. | Absent. | Present. | Present.                   | Absent. | Present.  | Absent. | Present. | Absent. | Present.  | Absent. | Present. | Absent. | Present.  | Absent. |
| January 20th.                                                                                   |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>90th Detachments               | 542                             | 49      | 9                           | 11      | 11                          | 12            | 12          | 1         | 1        | 1       | 1        | 1                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 493                             | 34      | 6                           | 10      | 5                           | 5             | 5           | 1         | 1        | 1       | 1        | 1                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 2170                            | 165     | 27                          | 55      | 16                          | 16            | 16          | 1         | 1        | 1       | 1        | 1                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 827                             | 59      | 7                           | 9       | 15                          | 1             | 1           | 1         | 1        | 1       | 1        | 1                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| February 20th.                                                                                  |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>90th Detachments               | 480                             | 42      | 5                           | 8       | 9                           | —             | —           | 1         | 1        | 5       | 1        | 16                         | 1       | 15        | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 490                             | 19      | 5                           | 6       | 3                           | —             | —           | 1         | 1        | 3       | 1        | 12                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 2052                            | 151     | 23                          | 37      | 14                          | 8             | 8           | 1         | 1        | 2       | 1        | 25                         | 1       | 14        | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 833                             | 45      | 6                           | 7       | 1                           | 1             | 1           | 1         | 1        | 1       | 1        | 10                         | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| March 20th.                                                                                     |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>90th Detachments               | 439                             | 41      | 7                           | 7       | 3                           | —             | —           | 1         | 1        | 19      | 1        | 15                         | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 492                             | 28      | 4                           | 9       | 5                           | —             | —           | 1         | 1        | 5       | 1        | 12                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 2051                            | 187     | 19                          | 39      | 18                          | 18            | 18          | 1         | 1        | 1       | 1        | 16                         | 1       | 16        | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 833                             | 46      | 7                           | 4       | 7                           | 1             | 1           | 1         | 1        | 1       | 1        | 16                         | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| April 20th.                                                                                     |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>90th Detachments               | 482                             | 42      | 10                          | 6       | 5                           | 2             | 2           | 2         | 2        | 3       | 2        | 12                         | 1       | 4         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 483                             | 22      | 7                           | 8       | 3                           | —             | —           | 1         | 1        | 1       | 1        | 12                         | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 2050                            | 163     | 48                          | 11      | 19                          | 8             | 8           | 4         | 20       | 5       | 61       | 2                          | 45      | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 857                             | 41      | 6                           | 8       | 5                           | —             | —           | 1         | 1        | 11      | 1        | 16                         | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| May 20th.                                                                                       |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>90th Detachments               | 428                             | 36      | 4                           | 9       | 5                           | —             | —           | 1         | 1        | 15      | 1        | 16                         | 1       | 9         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 480                             | 21      | 6                           | 6       | 6                           | —             | —           | 1         | 1        | 22      | 1        | 12                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 2059                            | 149     | 14                          | 35      | 6                           | 6             | 6           | 1         | 1        | 1       | 1        | 15                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 110                             | 6       | 1                           | 1       | 1                           | 1             | 1           | 1         | 1        | 8       | 1        | 3                          | 1       | 4         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| June 20th.                                                                                      |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 403                             | 32      | 3                           | 9       | 1                           | —             | —           | 1         | 1        | 13      | 1        | 12                         | 1       | 4         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 483                             | 15      | 4                           | 5       | 6                           | —             | —           | 1         | 1        | 17      | 1        | 12                         | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1607                            | 121     | 21                          | 27      | 11                          | 1             | 1           | 1         | 10       | 9       | 58       | 1                          | 21      | 1         | 2       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 848                             | 47      | 3                           | 7       | 7                           | 7             | 7           | 1         | 1        | 3       | 1        | 12                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| July 20th.                                                                                      |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers Detachments | 329                             | 37      | 3                           | 11      | 4                           | —             | —           | 1         | 1        | 10      | 1        | 19                         | 1       | 4         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers                                                                              | 482                             | 22      | 6                           | 5       | 6                           | —             | —           | 1         | 1        | 8       | 1        | 7                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1557                            | 143     | 61                          | 49      | 10                          | 10            | 10          | 1         | 9        | 14      | 3        | 35                         | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 873                             | 51      | 6                           | 7       | 12                          | 1             | 1           | 1         | 4        | 4       | 4        | 24                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| August 20th.                                                                                    |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 403                             | 22      | 5                           | 4       | 1                           | —             | —           | 1         | 1        | 17      | 1        | 12                         | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 483                             | 15      | 4                           | 5       | 6                           | —             | —           | 1         | 1        | 1       | 1        | 12                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1576                            | 169     | 21                          | 29      | 8                           | 2             | 2           | 1         | 1        | 41      | 2        | 58                         | 1       | 12        | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 873                             | 55      | —                           | 5       | 5                           | —             | —           | 1         | 1        | 7       | 1        | 17                         | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| September 20th.                                                                                 |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 401                             | 25      | 1                           | 9       | 3                           | —             | —           | 1         | 1        | 10      | 1        | 7                          | 1       | 6         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 475                             | 26      | 8                           | 6       | 3                           | —             | —           | 1         | 1        | 15      | 1        | 8                          | 1       | 5         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1548                            | 115     | 25                          | 34      | 9                           | 3             | 3           | 1         | 4        | 12      | 3        | 51                         | 1       | 39        | 1       | 15       | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 866                             | 48      | 8                           | 3       | 3                           | —             | —           | 1         | 1        | 16      | 1        | 18                         | 1       | 12        | 1       | 12       | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| October 20th.                                                                                   |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 402                             | 28      | 1                           | 7       | 4                           | —             | —           | 1         | 1        | 7       | 1        | 7                          | 1       | 2         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 476                             | 26      | 7                           | 2       | 4                           | —             | —           | 1         | 1        | 19      | 1        | 16                         | 1       | 9         | 1       | 5        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1545                            | 117     | 29                          | 29      | 10                          | 6             | 6           | 1         | 4        | 14      | 3        | 51                         | 1       | 27        | 1       | 11       | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 863                             | 22      | 4                           | 5       | 4                           | —             | —           | 1         | 1        | 16      | 1        | 16                         | 1       | 6         | 1       | 9        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| November 20th.                                                                                  |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 392                             | 35      | 12                          | 4       | 6                           | —             | —           | 1         | 1        | 7       | 1        | 11                         | 1       | 3         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 471                             | 24      | 6                           | 4       | 3                           | —             | —           | 1         | 1        | 6       | 1        | 16                         | 1       | 4         | 1       | 2        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1512                            | 124     | 34                          | 27      | 12                          | —             | —           | 1         | 1        | 14      | 3        | 1                          | 1       | 1         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         |         |
| 8th W. I. Regiment, African                                                                     | 857                             | 42      | 3                           | 3       | 1                           | —             | —           | 1         | 1        | 40      | 9        | 15                         | 1       | 2         | 1       | 2        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| December 20th.                                                                                  |                                 |         |                             |         |                             |               |             |           |          |         |          |                            |         |           |         |          |         |           |         |          |         |           |         |
| R. Artill. and Saps. & Miners<br>4th Battalion, 60th Regiment<br>Royal York Rangers             | 394                             | 32      | 7                           | 3       | 6                           | —             | —           | 1         | 1        | 16      | 1        | 8                          | 1       | 0         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Royal York Rangers Detachments                                                                  | 472                             | 26      | 6                           | 5       | 3                           | —             | —           | 1         | 1        | 16      | 1        | 12                         | 1       | 2         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |
| Total Europeans                                                                                 | 1514                            | 125     | 38                          | 48      | 23                          | —             | —           | 1         | 1        | 74      | 1        | 32                         | 1       | 6         | 1       | 15       | 1       | 11        | 1       | 6        | 1       | 1         | 1       |
| 8th W. I. Regiment, African                                                                     | 854                             | 22      | 3                           | 3       | 4                           | —             | —           | 1         | 1        | 12      | 9        | 5                          | 1       | 0         | 1       | 1        | 1       | 1         | 1       | 1        | 1       | 1         | 1       |

Total Europeans, 1814 — 15,140  
Total Africans, 1814 — 8,540



## NOTE TO TABLE III.

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THE European garrison of Barbados, for the year 1814, consisted of wings of corps as marked in the margin—under the immediate charge of regimental medical officers, and of detachments of different corps—under the care of the staff physician and staff surgeon. The European sick stands to the total European strength collectively, as one to thirteen; the proportion of febrile forms to the total sick list, as one to five nearly; of dysenteric, as one to four; of pneumonic, as one to ten; of hepatic, as one to one hundred and fifty-five; of rheumatic, as one to seventy-one; of ulcerative, as one to seven and a half; of cachectic, comprehending degenerated forms of acute disease, as one to forty-nine nearly.—The proportion of deaths to discharges from febrile forms stands, as one to forty-one and one-third; from dysenteric, as one to thirty-two and two-thirds; from pneumonic, as one to fourteen and a half; from hepatic, as one to two and one-fifth; from cachectic, as one to five and one-third; from the whole, as one to thirty-six and two-thirds; the annual loss of the strength, as one to twenty-five.

The 8th West-India Regiment (African) was the black corps in garrison at Barbados during the year 1814. The proportion of sick to the total strength stands, as one to twenty-two nearly; the proportion of febrile forms to the total sick list, as one to nine and one-fifth; of dysenteric, as one to nine nearly; of pneumonic, as one to six and one-quarter; of rheumatic, as one to eleven and two-thirds; of ulcerative, as one to nine; of cachectic, as one to fifty-three nearly.—The proportion of deaths to discharges from febrile forms stands, as one to sixty; from dysenteric, as one to thirty-four; from pneumonic, as

one to eight nearly; from cachectic, as five to one; from the whole as one to twenty-five and one-third; the annual loss of the strength, as one to twenty-two nearly.

## PART III.

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*Medical Topography of the principal British Possessions in the West-Indies; with Remarks on the Position of Barracks and Condition of Military Hospitals, in the years 1812 and 1813, &c.*

IT will be proper, in taking a view of this important and somewhat complicated subject, to establish preliminary positions as bases upon which the arrangements which are made for preserving the health of the military may be securely laid; and, in doing this, it will be necessary to repeat some part of what has been said in another part of the work. The interior of the greater number of the islands in the West-Indies is high and mountainous, the temperature cool comparatively with that of the sea coast. The sea coasts are various; at some places, bold and rocky; at some, flat and alluvial—indented at different distances by bays and creeks, the surface intersected irregularly by ravines, rivers and rivulets. The plains near the shores are of great variety of extent, more or less swampy in their natural state: the soil is gravelly and alluvial at some places; at others, muddy, foul and putrid.

As the interior of the greater number of the islands is mountainous and cool comparatively, so the mountain air is comparatively little injurious to the health of the transplanted European; at least the diseases which occur in the interior are little dangerous, even to strangers. The shores are, as already observed, irregular; in some parts, high and rocky; in some, flat, alluvial and swampy. Where they are flat and alluvial, febrile diseases are frequent; where swampy and foul, fevers are not only frequent, but often aggravated in degree, and fatal in high proportion.

The fundamental laws of nature are consistent:—they are occasionally so masked by circumstances as to appear, on a superficial view, to be contradictory of each other. The coasts of Guiana, where British troops now are, and the sea coasts of the southern parts of North America, where they were during the American revolutionary war, are notoriously less unhealthy than districts at a certain distance from the sea, even than districts that are elevated but not continuously elevated into mountain. The mountainous interior of the islands is, as repeatedly observed, less unhealthy than the sea coast. The facts, thus stated, are apparently contradictory of each other; the cause of the fact is one. The sea coasts of the mountainous islands, as low and flat, are ordinarily hot: the soil is frequently alluvial, saturated with moisture—stagnant in want of declivity from position, or in want of the declivity which is produced at the shores by the flux and re-

flux of tides. The tide rarely rises higher at the shores of the islands than one foot or eighteen inches; it rises ten to twelve feet or more on the coast of Guiana. It thus produces declivity during the ebb, which gives current to moisture through all the permeable parts of the soil. Where the tide declivity ceases, or where artificial declivity, produced by ditches and drains, does not exist, the air is usually unwholesome—on some occasions pestiferous. The fact is distinct; the conditions connected with it are obvious and important. If the atmosphere in which we live be the product of the earth, progressive motion in the moisture, which is in or on the earth's surface, is obviously connected with that condition of the atmosphere which maintains the health of the human system in activity: slow motion, or stagnation, under which a tendency to decomposition is manifested, is obviously connected with a condition in the same medium, which, acting subversively of health, produces a new process of action in animal life, which impairs the powers and finally effects the death of the individual.

Besides the differences produced through difference of natural localities, the artificial modes, under which the human species are grouped together by police arrangements, influence the condition of health in a striking manner. A given number of persons, collected within a narrow limit, yields a greater quantity of sickness, and ordinarily a sickness of a greater proportional mortality, than the same number of similar subjects dispersed over a

wide tract of country, corresponding in condition and quality of soil with the site of the town, or military quarter of limited circumference. The fact is not equivocal: it is proved in the history of the civil community, and strikingly exemplified in the history of the military who, instead of being divided into separate houses by families or otherwise, are often collected into capacious barracks of different stories, at a limited allowance of space, viz. twenty-two inches per man. The collection of a number of persons into a narrow circle, with the living animals that are thought to be necessary to their uses, though not sufficient to contaminate the air of a tropical climate with a directly morbid or contagious property, has notwithstanding the obvious effect of augmenting the heat or sensation of heat, and of apparently absorbing or diminishing a certain quality in the composition of the atmosphere which is essential to the preservation of health. The capacious, the magnificent and crowded barrack is generally observed, in investigating the case, to be less healthy than the barrack that is open and ill equipped, even than the thatched hut that has proportionally few inmates: hence it is reasonably inferred that a large allowance of space is essential, even primary among the considerations to be kept in view, in constructing quarters for the accommodation of the military in a tropical country.

Besides the space allotted to the individual within the walls of a house or barrack, the mode, after which the house or barrack is constructed, is another

point of importance to be considered scientifically, in estimating the effects of artificial police upon human health. It is a truth, concerning which no one I believe pretends to doubt, that the material cause of endemic fever, of whatever form the fever may be, is enveloped in the exhalations which arise from the surface of the earth, more abundant, or more concentrated in some situations than in others, and generally most abundant or most concentrated in damp, swampy and putrid soils. It is obvious, if this be admitted, that the fundamental conservative rule of health, in so far as regards the mode of constructing the place of habitation, is necessarily to be directed to the means of repressing exhalation from the actual site, as well as of diminishing the power of its impulse when carried from a distance. It follows as a consequence of this view that the surface, over which the roof is erected, be covered with well compacted terrace composition, brick or pan-tile laid on lime so as to be impenetrable to the ascent of moisture; or, if this be not done, that the floor be laid on pillars of sufficient height to admit of complete and thorough ventilation underneath. It is important to the preservation of health that the body of the building be spacious within the clear, that a jalousied gallery of eleven or twelve feet be added to its circumference, that the roof be double—the inner at some distance from the outer so that the action of the sun on the higher story of the dwelling, if it consist of more stories than one, be thereby diminished. Instead of attention to these

fundamental points in the construction of military quarters, the site of few houses, and the site of fewer barracks in the West-Indies is drained exteriorly; few, if any, are erected upon terrace or brick-paved floors, and only a few upon pillars of sufficient height to admit of thorough ventilation underneath.—To be explicit, the floor of the greater number of the barracks, in the Windward and Lee-ward island station, is laid upon beams which rest upon walls of one foot, eighteen inches, or at most two feet in height, the walls close in some, divided by slits in others—the slits not so disposed as to admit of thorough ventilation. Moisture ascends from the earth by the wall as by a conductor. Collected, in the vacant spaces between the beams as in close chambers, it issues, in imperceptible exhalation through seams or crevices in the floor, into the area of the barrack room as drawn by the greater heat of the open air. The damp, thus collected, may be considered as swamp exhalation. It is sometimes observed to arise in barracks that are but recently built; often in old barracks that are going to decay. In these, water, or other moisture that is spilt upon the floor, passing through holes and crevices, mixes with the soil underneath, thereby actually forming a swamp, or exhaling surface under the boards on which the soldier sleeps,—an occurrence not unfrequent in the lower stories of the soldier's habitation. But, besides exposure to exhalation from the damp earth, or from swamp formed artificially in the manner described, the barracks are in themselves

generally deficient in interior capacity, or width of roof. A great many of the barrack buildings now existing are narrow sheds, without gallery, or with a narrow gallery on one side only; scarcely one of them, except the new barrack at Barbados, is sufficient in width to permit the inmate to retire from the annoyance of the morning or evening sun; and none of them, that excepted, are provided with jalousied galleries for the exclusion of the rain. A narrow and single roofed building is necessarily a hot habitation in a tropical climate. With a view to remedy the inconvenience of excessive heat, the sides of the barrack are pierced by numerous holes or windows for the sake of ventilation, similar in form to port-holes in the sides of a ship. Where the breezes are strong, the agitation of the air thus produced in the interior is disagreeable to most persons. The soldiers, heated by overcrowding and the effect of a powerful sun acting on a low and single roof, are easily susceptible of impression under a relaxed state of surface. Rendered artificially susceptible in this manner, they are exposed to be winnowed like a heap of wheat between the doors of a barn;—it is reasonable to believe that they not unfrequently suffer injury by it.

The native of Europe, or other temperate latitude, who migrates to a tropical climate, experiences a change in the condition of health as a consequence of migration. The natives of the British empire flock to the West-Indies in numbers, either as military, merchants, or planters; they are thus exposed

to numerous chances of indisposition from the mere effect of change. The extent of the effect of change, simply as change, is considerable: it is augmented by the artificial circumstances under which the individuals choose to live in expectation of gaining money, or under which they are compelled to live in execution of duty. The islands of the West-Indies, if not settled originally as a scheme of commercial speculation, have been cultivated subsequently entirely in that view. The sites of the principal towns have been chosen as they best afford commercial conveniences, viz. facilities of embarking and disembarking merchandize; consequently they have been fixed in bays and creeks, or at the mouths of rivers, frequently in the vicinity of swamps, lagoons and foul grounds, generally in situations more or less exposed to the noxious influences which proceed from depots of animal and vegetable matter tending to decomposition. A depot of merchandize is the heart's core of a commercial colony; and the parent state, which cherishes and protects the colony for the sake of what it yields, is often compelled to station a military force in places that are unfavourable to health on account of the protection which its presence gives to the wharfs and warehouses which contain merchandize that yields revenue.

The ravage of disease is considerable among the common inhabitants of towns so placed; it is great among the military, who, as suddenly transplanted to a foreign soil, compelled to reside in a bad loca-

lity; and, moreover, constrained to pass the days and nights in a barrack, the air of which, as deprived of a portion of its vitality by over-crowding, is defective of power in stimulation, or as agitated impulsively by currents of wind produced by counter openings in the sides of the barrack, is artificially armed with injurious force, so as to produce artificially an increased quantity of sickness—and generally a sickness of an aggravated kind.

It appears, when the subject is duly considered, that only a small part of the sicknesses, great as they sometimes are in the military force which is stationed in the British possessions in the West-Indies, ought in reality to be ascribed to what can be properly called the effect of climate. Much of it is artificial, viz. connected with position, mode of constructing and equipping barracks, and other arbitrary regulations of interior police. A report, voluminous and circumstantial, was made by the author on this subject in the years 1812 and 1813, and submitted to the consideration of the Commander of the Forces in the Windward and Leeward island station at the time. The report was made with a view to impress that officer, and through him the higher authorities of the state, with the utility, that is, the radical economy of husbanding the health and lives of the military, by endeavouring to obviate, through attention to barrack accommodation, (viz position and mode of construction) the effect of causes which apparently increase the quantity of sickness, and which may even be supposed

to contribute to the artificial increase of its power of destruction. The base of the cause is one; the laws which regulate its movements, that is, which diminish or increase its power, are uniform and consistent; the principle through which the application of the means by which its injurious effect is to be averted is simple; there is reason to believe that the application would be effectual, if it were made. The report alluded to, being of great length, cannot be given in this place: the following remarks are taken from it.

*Island of Barbados.*

The island of Barbados lies in the thirteenth degree of north latitude. The land is a table land, rising from the sea by a succession of steps or stages, more or less regular, to the height of two thousand feet. The mass of the island consists of a soft rock like marl; the plains or flat surfaces, between the different steps or banks that form the circles of elevation, are covered with black vegetable mould of different depth, viz. from six inches to eighteen. Barbados lies windward of the other islands, and in size ranks among the smaller. It is nearly round in form, compared not unaptly to a turtle floating on the surface of the ocean. The surface is now dry and cultivated: it has not the appearance as if it had ever been swamp. A number of depressions, variously dispersed over the level surfaces, collect water in the season of rain,

so as to form ponds ; but, whether natural or made by the planter for the convenience of giving water to his cattle, they rest on a base of marl and do not appear to send out exhalations that are materially injurious to health. Barbados can scarcely be said to possess an open stream of running water: the most considerable—and it is comparatively a gutter, makes its way into the sea through Bridgetown, which is the capital of the island. The site and the immediate environs of Bridgetown are low and flat—the soil consists of sand with intermixture of mud or clay. Being flat it is saturated with moisture in the season of rain ; but, as rains are comparatively rare and scanty for a tropical climate, the island, particularly the interior which is declivous and cultivated, suffers little inconvenience from excess of moisture. Barbados, as before observed, has nothing that can be called a stream of running water; it contains notwithstanding excellent water at very little depth below the surface, so as to be abundantly supplied with that element through means of wells. The breeze which blows from the east during the day is usually strong, rarely violent: the winds, which during the night, blow from the north, are often sharp and sometimes disagreeable by sharpness to those who are lightly clothed. The heat is moderate as the heat of a tropical climate: it seldom rises higher than eighty-eight degrees of Fahrenheit's thermometer; the ordinary range is between seventy-six and eighty-two; but higher at Bridgetown through local circumstances.

The garrison of Barbados, which was the head quarters of the Windward and Leeward island military command, amounted, during the time to which this report relates, to nearly three thousand men, partly European, partly African. The barracks for the garrison are placed near St. Ann's castle, about one mile windward of Bridgetown, near the point which forms the eastern extremity of Carlsisle bay. The greater part of the barracks occupy a level surface of the plain, which intervenes between the first and second step of elevation, and chiefly near the sea margin of the plain. The first group of barrack building stands upon a base of rock, higher by a few feet than the sea beach, but properly speaking under the ledge of what is considered as the first step of elevation. It consists of three sides of a square; the one on the west, a stone building of two stories, with a narrow open gallery to windward; the one on the east, a wooden building of two stories—without gallery; the one on the north, a stone building with a narrow gallery to the south. The barrack on the west was occupied by European soldiers: it was not an agreeable quarter; the upper story was hot during the day, from the action of the sun on a single roof; the lower story was defective in ventilation. The barrack on the east was erected upon pillars of different height according to the inequality of the ground. It was a capacious barrack, calculated for an entire regiment in its full strength. It resembled in form of construction, an inverted ship with numerous port-

holes for ventilation ; and, as sheltered in some degree from the sea breeze by higher ground or other interposition, is hot at all times ; and, when filled to barrack regulation by Africans, it is literally, an offensive steam bath. The barrack on the north was portioned out to officers as quarters : it was better ventilated than the others ; and, though not altogether an agreeable quarter, it could not with justice be said to be an unhealthy one.

Another barrack in 'zig zag form—a wooden building of one story, erected upon pillars so as to be thoroughly ventilated underneath, stands east of that last described, at the margin of the plain which tends interiorly. It is narrow and low roofed, without galleries, ventilated by flap board windows similar to port holes in the sides of a ship. It is completely exposed to breezes from the sea ; it has not, with all its defects, been an unhealthy quarter to European troops.

Besides the barracks now described, which are of several years standing, a barrack has been recently erected near the centre of the plain which extends from the first to the second step of elevation. It is a brick building, the largest and most magnificent military quarter in the Windward and Leeward island command ; and, except in size, there is little objectionable in the form of its construction. The actual site is dry, as resting on a base of rock ; but the surface is level, and the quality of the soil on the south-east of the quarter is glutinous, so tenacious of moisture as to constitute

a bog in wet weather, through which the soldier, in going to and returning from the duties of the garrison, was obliged to make his way, until the latter end of the year 1814, when a road of communication was permitted to be made by the labour of the men themselves, who solicited the indulgence. Besides the tenacious and boggy nature of the soil which intervenes between the new barrack and the rest of the garrison, a depression, like a cattle pond, presents itself in the centre of the plain: it is filled with water in the rainy season—in fact only dry after long continued drought. The barrack itself consists of two stories; the floor of the lower is laid upon rafters, raised about two feet from the ground on the south or lower side, and nearly level with the rock on the upper. The interior is spacious; the roofs lofty; the body of the building surrounded by a gallery ten or eleven feet wide, open in the year 1812, closed or jalousied on the windward side in the year 1813. The barrack runs east and west: the breeze is often strong in this part of the island during some part of the day; and, before a jealousy was added to the gallery, it frequently annoyed those who occupied the upper story. Since then, the new barrack is a desirable quarter, except in so far as augmented heat and irritation, arising from the noise and tumult of many hundreds of persons amassed together under one roof, make it otherwise.

A quarter, for the reception of officers, was also erected near the new barrack about the year 1807.

It runs north and south, as if it had been intended to form one of the sides of a barrack square, in the centre of which would have been a pond and bog. It is a brick building of two stories with a narrow open gallery on the east. The winds were, at times, annoying in the upper story until the year 1813, when a jalousy was added to the gallery. The officers' barrack is placed in the most boggy part of the plain; and, as such, it could not be approached, except through mire, in the rainy season, until the year 1814.

The garrison hospital stands north-east of the Castle of St. Ann, about the distance of a quarter of a mile, and within a few paces of the margin of the first step of elevation from the sea beach. It would appear, from what has been done, to have been intended to erect hospitals at this place for the whole sick of the garrison. The design terminated with the erection of two ranges of building on the same line, capable of containing one hundred and fifty persons at the allowance of six feet per man. The building is of two stories, with open galleries seven feet in width: the ascent to the upper story is by an outside staircase: the roof is double; the ceiling of good height. The wards, which are seven in number, are wholesome; and, since the windward galleries were jalousied, they are not uncomfortable quarters for sick persons in so far as they go: they are not adequate to the wants of the garrison. The offices connected with the hospital were miserable in the year 1812; so

far decayed indeed that they threatened every day to fall to pieces. A requisition was made to the commander of the forces for relief on this head. The ground of the requisition was admitted. A plan was given in of what was wanted; and orders were given that workmen should proceed to the execution of it. The new building consisted of a purveyor's office and issuing store; quarters for a steward and matron; a surgery for the preparation and dispensing of medicines; a receiving and bathing room, with the necessary apparatus for the effectual application of warm and cold bathing; apothecary's store and office; an orderly room for the transaction of hospital business; a quarter for the resident mate; and two apartments, suitably equipped with furniture, for the accommodation of the more destitute of the sick military officers. The parts of the old offices, which were least decayed, were removed to a convenient situation within the hospital enclosure, and put together for hospital purposes. They served to form an hospital of two apartments for the reception of persons who required more quiet than could be obtained in a common ward; or, who were offensive or dangerous to others by proximity; and also an hospital of two apartments for sick women and children.

The hospital now described, which was wholesome as an hospital, and with the additions which were made to it in the year 1812, not uncomfortable, was not in itself equal to the wants of the garrison by at least one-half. A house, on the west-side of

the plain on which the garrison at St. Ann used to assemble for parade, was set apart for the reception of the Royal Artillery and military artificers. The house is of one story, raised by two or three steps from the ground ; the roof lofty ; the hall or principal ward spacious, galleries in front and rear, with two apartments, or sleeping-rooms at each end. The galleries were jalousied in the year 1813 ; the sleeping-rooms were repaired and made comfortable as lodging apartments, viz. one for the medical officer in attendance on the sick ; one as a quarter for a sick commissioned officer ; one for a surgery ; and one for such, among the men, as required, on their own account or the account of others, to be moved from the common ward. The accommodation was upon the whole good ; the best, so far as it went, in the Windward and Leeward island command. It was augmented by a range of shed form building in the rear, which, connected to the wings of the house by a high railing so as to prevent communication with the exterior, was fitted up and appropriated to the reception of sick women and children, or for slighter indispositions among the men when the proper hospital was over-crowded.

The sick of the African corps, which composed a part of the garrison of Barbados, was received into a house which stood upon low ground, on what may be called the sea beach :—it was insufficient in extent and form of construction for the purpose to which it was applied.

The island of Barbados, as cultivated wherever it is capable of culture, presents no open swamp on its surface, such as is believed to produce the cause of endemic fever. But, though it present little of what is offensive and held to be the common cause of fever, a comparative view of the hospital returns, of the Windward and Leeward island station, gives reason to think that it does not stand high on the scale of salubrity. It is often the headquarters of the military command in the West-Indies. As such it is a kind of military depot. It often has a full garrison,—and moreover, for the most part, a large proportion of subjects recently arrived from Europe. From that cause, and perhaps from qualities in the atmosphere which we cannot measure and judge, the form of disease, usually called yellow fever, is more common in the hospitals at Barbados than in any other of the islands within the British command. Intermittent fever, commonly called ague and fever, does not rank among the febrile forms of this island. The intermittent exists when imported: distinct ague and fever, as the product of the causes which belong to the soil of Barbados, did not once occur to my observation in the course of three years. The gastric or bilious remittent is frequent in the autumnal season: it is sometimes malignant and rapidly fatal in the latter months of the year. The concentrated endemic, usually called yellow fever, whether ardent and continued, or obscurely remittent is not rare; the dysenteric form is common; the cerebral, whether

rapidly fatal, or slow and protracted, is frequent—more frequent perhaps than any other except the dysenteric. In the drier months of the year, dissections are seldom made of those who die of fever, without discovering traces of organic derangement in the cranial cavity, particularly in the arachnoid coat and pia mater ; and, in so far as opinion can be formed from imperfect knowledge of cerebral structure, in the substance of the brain itself. The pneumonic form of febrile disease occurs often among European military in certain months of the year ; it is frequent and fatal to great extent among the African. The thickened leg, usually called the Barbados leg, is not uncommon among the native inhabitants ; it appears very rarely among strangers. It is more common in Barbados than in most other of the tropical islands :—it is not peculiar to it. The annexed return, No. 1, furnishes grounds on which the reader may be enabled to form opinion of the salubrity of Barbados, relatively with the other islands in the possession of the British :—some cases are annexed, illustrative of the history of the febrile forms ; a great many are to be found in the body of the work.

#### CASE I.

Barbados, *June 6th, 1812.* Holland, Royal Artillery, aged twenty-four, admitted into hospital with symptoms of fever of some violence. He complains much of pain of the head and limbs ; the pulse is quick and hard, the skin hot ; nausea with vomiting. Calomel gr. v., jalap gr. xv. *7th.*—The skin cool ;

the bowels freely opened: saline moisture, with antimonial powder, every fourth hour; sponged with cold water. 8th,—much purging; blister between the shoulders: anodyne draught, viz. tincture of opium, æther and peppermint water. 9th,—camphorated mixture, with vitriolic æther, every fourth hour; blister to the pit of the stomach; head shaved and covered with wet cloths. 10th,—very restless in the night—incoherent, body open: mixture continued; yellow suffusion of the skin: clyster: bark, with aromatic confection and Madeira wine, every third hour; blisters to the inside of the thighs. 11th,—several stools in the night: restless; incoherent; skin of a bright yellow. 12th,—restless in the night: medicines continued—wine and arrow root. 13th,—restless in the night. Evening,—tranquil. 14th,—tranquil; the extremities warm; the pulse expansile. 15th,—tranquil; sleeps much—not easily roused: rhubarb and magnesia. 17th,—better. 18th,—costive; pulse full: calomel and rhubarb repeated. 22nd,—body open—to purging: blisters, with chalk mixture and tincture of opium. 13th July,—discharged.

## CASE II.

Barbados, November 26th, 1816, (at the time that a very fatal epidemic prevailed in the garrison, and even among the civil inhabitants of the island.) B——n, a medical officer who had been several years in the West-Indies, and who had done daily duty in the hospital for some time, was seized in the night of the 26th, in his first sleep, with sensations of cold and rigor, followed by flushings of heat and severe head-ache. 27th, 6 A. M.,—pain in the back, head and limbs excessively severe: blood abstracted to the extent of two pounds: some relief; jalap and calomel. 10 o'clock A. M.,—pain of the head and back so severe as to occasion unrestrainable moaning: one pound of blood abstracted; pain in the back removed; pain in the head still felt, but supportable; the bowels costive; nausea: a clyster was administered; a large, black and fetid evacuation followed: seidlitz powder: nausea and sickness continue; head-

ache severe towards evening: blister between the shoulders. *28th*,—blister risen; head-ache diminished; two black evacuations by stool: seidlitz powder; diluent drinks; clyster repeated; the pulse very frequent; the skin hot; the tongue foul; head giddy: the body sponged with vinegar and water; seidlitz powder: strength prostrated: mercurial friction to the thighs. *29th*,—very bad night;—anxiety, feebleness; two black fetid stools: seidlitz powder: the eye yellow. Evening,—haemorrhage from the mouth—apparently from the parts about the throat; astringent gargle. *30th*,—much haemorrhage during the night; great anxiety; three copious fetid stools—black as ink; dark coloured fluid thrown up by the mouth, the colour apparently derived from the blood which had descended from the throat into the stomach; the skin and eye yellow: sago, with wine, in small quantity: haemorrhage from the mouth alarming: carried out in a chair, placed on the edge of the rock with the face towards the sea, the mouth open to the breeze; the haemorrhage ceased: when an attempt was made to swallow, the coagulum was forced off, and bleeding followed: pulse frequent and feeble. *December 1st*,—bleeding from the mouth diminished. *2nd*,—haemorrhage nearly stopped; stools black; urine high coloured and scanty. *3rd*,—heat of the body natural; the quantity of urine increased: infusion of bark, with port wine; a glass of porter *4th*,—skin cool and dry; tongue foul; no particular complaint, except sensations of weakness. *January 1st, 1817*,—resumed duty at the hospital. *Note*.—During the whole of the illness, the mind was perfectly collected.

## CASE III.

Barbados, *October 8th, 1816*, (during epidemic sickness.) Thomas Reely, 25th regiment, aged twenty-four, admitted into hospital at ten A. M. but had been unwell for the nine preceding hours. He complains much of pain in the back, loins and head; the face is flushed, the eye heavy; there is sensation of pain at the scorbiculus cordis; tongue foul; nau-

sea; body regular; skin hot and dry; pulse 120—small withal; anxiety. Bled to the amount of forty-two ounces,—the blood not buffered: warm bath; head shaved; wet cloths with vinegar applied to the head, and whole body repeatedly during the day: calomel gr. xv., extract of colocynth gr. x., made into four pills and given immediately, followed at a short interval by a solution of purging salts. Evening,—the head much relieved since bleeding; six motions downwards; skin hot and dry; stomach irritable: cold affusion, James' powder gr. vi., calomel gr. iv., made into two pills and taken immediately. 9th,—perspired freely after the cold affusion; head-ache gone; skin cool; pulse 86; slight pain in the back; stomach less irritable: decoction of bark oz. ii., with vitriolic acid thirty drops, every third hour. 10th,—Much as yesterday: medicines continued. Evening,—increase of external heat, with head-ache at three o'clock; pulse 96: cold affusion. 11th,—perspired freely after the affusion; fever gone: decoction of bark. 12th—no return of fever. 21st,—discharged.

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*Island of St. Christopher.*

The island of St. Christopher, twenty miles in length and seven in breadth, lies in latitude 17<sup>mi.</sup> north. A ridge of mountain which runs from east to west, high but not impassable at any part, and depressed near the centre (Spooner's level) so as to be easily passed, constitutes the body of the island. The sides of the ridge incline with more or less declivity towards the sea coast, gradually on the north so as to be considerably extended; rapidly, but not precipitously on the south. The south side, rapidly inclined to the sea coast, is more or

less variegated by alternation of obtuse ridges and depressions descending in lines from the central crest:—small streams, rushing in torrent through the centre of the depressions, streak the surface of the southern aspect somewhat picturesquely in the season of the heavy rains.

The temperature of the air is here upon the whole moderate for a tropical climate, rarely so high as to be disagreeable to sensation at the distance of one mile from the shore; at the higher of the mountain plantations, and particularly at the central depression in the ridge, known by the name of Spooner's level, it rarely exceeds 74 of Fahrenheit's thermometer; on the sandy shores on the south, viz. at sandy bay and *Bassterre*, it is comparatively high in degree, and often oppressive by impression.

The soil of St. Christopher consists generally of a light vegetive mould. The declivity of the surface is considerable at most places, except at the south-west and south-east extremities. Water does not appear to stagnate any where upon it so as to be formed into ponds; and it cannot, from declivity, be supposed to move sluggishly underneath, so as to produce the effects upon health which are generally supposed to be produced by exhalations from stagnant or slow moving moisture. The island may therefore be considered, judging by exterior aspect, to be a relatively healthy station for military. Brimstone-hill, an insulated conical hill on the plain at the south-west part, is the principal station of the military force: it has been generally

regarded as the most healthy station in the Charibean seas.—The table, No 1, here annexed, shows the loss sustained annually by the garrison between the years 1803 and 1814.

Brimstone-hill, at the distance of a quarter of a mile from the shore, rises to the height of six hundred feet above the level of the plain. It is a mass of rock, the form irregularly conical, clustered with protuberances, or indented by depressions in various places. The depressions or flat surfaces, which are near the summit of the hill, are covered with barracks or other buildings that are necessary for the purposes of the garrison. The summit is forked: the fork on the west, higher and broader than that on the east, is fortified as a citadel. The space or level between the forks is partly covered by barracks for troops and quarters for officers, partly reserved for the muster or parade of the garrison: the whole of the level surface is of small extent.

The rocks, upon which the batteries are laid and the barracks built, are bare and destitute of shrubs; consequently the reverberation of the rays of the sun, from bare and arid surfaces, augments the heat artificially, often indeed exalts it to a high degree—sometimes to 90. The winds, which are cool as they descend from the mountain, ascend to the hill through indentations or hollow ways in the rock as through funnels. They strike fully on most of the quarters, and, striking with augmented impulse from the manner in which they are conducted, they

pierce with force rather than refresh by coolness. There is no marshy ground near Brimstone-hill, and no source of exhalation from stagnant moisture, except such as may lodge in cavities in the rock, or on flat surfaces that are covered with sandy soil and shrubbery. But though few of the causes, from which fevers are ordinarily thought to arise, exist at this station, or even in the vicinity, the vicissitude of temperature is considerable near the summit of the hill; hence the soldier, exposed in the course of his duty to frequent change of condition and frequent variation in the degree of atmospheric heat, is necessarily exposed to the action of causes which act adversely upon health: in this manner, he often suffers from febrile disease—most frequently of the local form, viz. cerebral, pneumonic, dysenteric or ulcerative, that is, sore or ulcer on the legs.

The barracks on Brimstone-hill, both for men and officers, are small and hampered: they could not well be otherwise in want of level space. They have been long built; and many of them were considerably advanced to decay in the year 1812; in fact, so far advanced to the uninhabitable state that it might have been considered as economy of money to build anew, rather than to repair what existed. If it be thought proper to build, it would be well, prior to the commencement of an undertaking which implies a considerable expenditure of money, to consider in what manner the locality could be changed, so as to assure an increase of convenience and security of health for those who are destined to inhabit. Brim-

stone-hill is regarded as a strong place, almost as an impregnable one. It is notwithstanding practicable in more places than one; and it would not perhaps be deemed an enterprize of extraordinary daring, if an enemy were in possession of the island, to attempt to carry Fort George by storm. If storm be practicable, and those who are locally acquainted with the hill can scarcely doubt of it, the first step to be taken in carrying the projected improvement into effect, must necessarily be considered the adjustment of means which render all the practicable places impracticable; the second, the adjustment of all minor arrangements which increase conveniences and diminish the force of causes which are calculated to act injuriously upon human health. The defence of Brimstone-hill, which is supposed to assure the sovereignty of the island, depends upon Fort George being impregnable. In order to accomplish this, it is necessary that the eastern fork, called Monkey-hill, be levelled to such degree at least as to be placed completely under command. But, if instead of being levelled according to the eye of a military engineer for a military purpose, it were brought to the level, or nearly to the level of the intervening plain which serves at present for the place of parade, the material which constitutes the hill being thrown into a funnel like a gape on the north between the western and eastern forks, a considerable space would be thereby gained for the erection of barracks, or for exercise and military evolution.

Besides the advantages resulting to the garrison from the increase of level surface gained by the removal of Monkey-hill, the impetuosity and eddy blasts of wind, which, as the case is, are not unfrequently disagreeable and injurious, would be thereby materially diminished, as less concentrated by the form of ground over which they pass; and if the margin, or upper part of the new acquisition between the western and eastern forks, were planted with wide spreading trees, the blasts of wind would be softened by the foliage, or broken to gentle ventilation by such interposition. Lieut. Colonel Light, of the twenty-fifth regiment of foot, who resided for some time on Brimstone-hill, examined every thing relative to the defence and improvement of the station with care, projected some things with an appearance of genius; and, among others, suggested the feasibility of levelling Monkey-hill with a view to extend the parade; and to obtain ground for the erection of barracks and other buildings. Lieut. Colonel Light is an amateur in engineering; and, in so far as a non-professional man can be warranted to form opinion, he is not without knowledge on the subject. He calculated the expense for which the work might be done; and, having done so, he maintained that except for tools, damaged powder for blasting, and a small allowance of rum as remuneration to the soldier for extra labour, nothing would be chargeable against the public for the execution of a work, which no one can deny is necessary for the comfort of the gar-

rison, as well as for the security of the post against an enemy.

Further, if besides this great undertaking projected by Lieut. Colonel Light, the various protuberances were levelled and the cavities filled up on the glacis of Fort George, so that every point of approach was brought under a fire diverging from within, the defence might be thought to be adequately provided for; and if the vine, melon, pumpkin and other garden stuff which spreads its foliage on the ground, were planted near the summit of the hill and stations of the sentinels, the force of the winds would be moderated thereby, at least the impulse would be softened by passing over green and succulent herbage, instead of white and arid rock. The power of the causes which produce sickness would, it is presumed, be diminished by the means here suggested; and there is moreover reason to believe that the soldier, finding relief from *ennui* in the culture of a garden, would be little solicitous of the return of the hour for issuing the allowance of grog; which, as the case is, chiefly occupies his thoughts and constitutes the main source of his pleasure.

When the locality on Brimstone-hill has been improved in the manner suggested, or in any other manner that may be deemed preferable, the mode of constructing barracks that are suitable to the circumstances of the garrison, is the next subject of consideration:—it is one which deserves the attention of a scientific architect. Whatever be the

extent of the barrack roof, that is, whether it be for one company, half a company, or an entire regiment, a floor of terrace, brick or pan-tile is preferable to a floor of board on Brimstone-hill. It is equally secure against injury from damp as a building that is erected upon pillars, and it is less liable to be overturned by the violent winds or hurricanes which occur not unfrequently in this island. It is necessary, in tropical climates as in all others, that ventilation be free in crowded apartments ; and, that it may be free in the present case without subjecting the inmate to the impulse of cold and drying winds, it is recommended that jalousied galleries be added to the house in all its circumference, that the jalousies, on the north and east particularly, be so correctly fitted that rain, however impetuously driven, do not find a place by which to enter.

The ridge of mountain, which runs from east to west in the central part of the island, is discontinued, as already stated, at a certain point of its course for about one mile in length, making an impression that a niche had been made artificially in the crest, in such manner as to leave the bottom of the niche at an elevation of six hundred feet or more above the level of the sea. The sides of the niche, which is called Spooner's level, somewhat resemble a deer park thinly dotted with trees. The soil is firm, the declivity such as gives a forward course to moisture, whether it be on or under the surface. The temperature is moderate ; the air pure and refreshing ;—the climate is in fact delicious. The level is

in a manner secluded—distant from sugar estates, and easily guarded from intercourse with the rest of the island. The properties of the locality struck the writer forcibly as suitable for the establishment of a convalescent depot for the military of the command; and, impressed with an idea of benefit to the service from the adoption of the measure, he considered it to be his duty to submit a proposition on the subject to the Commander of the forces. The reasons urged in support of the measure were strong, or rather demonstrative of utility: they did not bring conviction; at least they did not produce the conviction that authorized the General to act:—nothing was done.

Brimstone-hill may be considered upon the whole as healthy, but not exempted from the occurrence of sickness. In common times, the mortality among the military who form the garrison is comparatively small: at particular times, sickness is epidemic, and, when epidemic, it is often fatal in high proportion. A disease of epidemic character occurred in the summer months of the year 1811, and in the spring months of the year 1812. It was of an aggravated kind, viz. the form known by the name of yellow fever. It was fatal when left to its own course, or feebly opposed by art. There are several cases of the disease which occurred in 1812 in the body of the work; a few are now added of that which occurred in 1811, as illustrative of history, &c.

## CASE I.

Brimstone-hill, *July 13th, 1811.* William Young, aged twenty-two, brought to the hospital during the night. The pulse was quick and small, the tongue foul and yellow. A purging bolus given immediately: the bolus operated. Pains of the head, back and loins severe; skin hot and dry: calomel gr. vi., James' powder gr. ii. every third hour; inunction with mercurial ointment every fourth hour; cold affusion. *14th*,—pulse quick; skin hot and dry; thirst urgent; head-ache severe; body open; no vomiting; tongue foul and white: calomel and James' powder; mercurial inunction continued; cold affusion repeated. *15th*,—pulse quick, soft and small; tongue foul and moist; no vomiting; body bound; head-ache continues: calomel, James' powder and inunction continued; bathing omitted. *16th*,—pulse small and weak, less frequent than heretofore; skin cool: starts in the sleep: skin yellow; tongue very foul. *17th*,—pulse very small and weak—not frequent; skin warm; yellowness generally diffused; tongue foul and black: restlessness; no vomiting; body bound: calomel and inunction continued: purging clyster. *18th*,—pulse very small and weak; skin cool; extremities cold; skin very yellow; tongue black and dry; hæmorrhage from the nose; no vomiting; body open: calomel continued, with decoction of bark every third hour. *19th*,—pulse very quick and fluttering; tongue foul and black; eyes and skin yellow; hickup very troublesome; great anxiety and restlessness: asafœtida and vitriolic æther. *20th*,—pulse very quick and small; skin cool; yellowness the same; restlessness; anxiety; no hickup: fetid mixture with æther. *21st*,—pulse very small; skin cold; stupor; muttering delirium; great weakness; oozing of blood from the nose; cadaverous smell. Died at ten o'clock P. M.  
*Note.*—It appears, by the diet tables, that this person had taken sixteen gills of port wine, and six gills of brandy in twenty-four hours.

## CASE II.

Brimstone-hill, *January 15th, 1811.* P. Cummins, aged nineteen, complains of pains of the head, back and limbs; the pulse quick and full; the bowels costive: jalap gr. xx., calomel gr. vi., to be repeated every fourth hour until it operate. It was repeated once without effect: two grains of calomel was added, with a purging draught. *16th*,—evacuation by stool; tongue foul; vomiting; pain in the head somewhat relieved,—still severe; pain in the back and limbs excruciating; pulse quick and full: six grains of calomel every fourth hour. *17th*,—body costive; tongue very brown; pains in the limbs severe; feebleness—want of power. An ounce of salts. After the operation of the salts, decoction of bark to the amount of one pound in the course of the day. *18th*,—Tongue foul, body open, pulse quick and weak; skin hot and dry; febrifuge mixture every other hour. *19th*,—pulse small and weak; tongue foul; vomiting at intervals: bark in substance—a drachm every third hour. *20th*,—pulse small and weak: mercury and decoction of bark continued. *21st*,—pulse rather more full; tongue quite black and hard; body costive; skin of a deep yellow; sensations of weakness; jalap and calomel: after the purgative operation, six grains of calomel every third hour. *22nd*,—pulse pretty full; tongue parched; body open; skin not hot; hiccup troublesome: calomel gr. vi. every third hour; assafœtida gr. iii., aromatic confection gr. vi. every two hours. *23rd*,—body open; tongue moist, but black; stupor; pulse rather full; yellow tinge very deep; hiccup intermittent: six grains of calomel every third hour: assafœtida every other hour. *24th*,—pulse full and quick; skin warm; yellow colour, deep and generally diffused; some stupor; tongue very black and dry; body open; hiccup returned: calomel and assafœtida continued. *25th*,—pulse full and quick; skin warm; tongue black and dry; body open; hiccup distressing: medicines continued: numbedness in the extremities; purging during the night. *27th*,—pulse quick and soft; skin cool; sensations of burning heat at the stomach and in the bowels; tongue black

and dry; thirst urgent; bleeding from the anus. 28th,—died at six o'clock in the morning.

### CASE III.

Brimstone-hill, *June 16th, 1811.* Pilkington, aged twenty, complains of pain in the head and limbs; the body is costive, the tongue foul, nausea and vomiting troublesome. Purging bolus given at admission. 17th,—pulse weak, small and quick; body open; skin moist; tongue foul; vomiting troublesome: calomel and opium every third hour; two drachms of mercurial ointment rubbed into the thighs morning and evening. 18th,—the vomiting continues; the body is open, the tongue foul, the pulse small and weak. 19th,—medicines continued: vomiting distressing; body open; tongue foul; pulse small and weak; skin cold and moist: medicines continued: blister to the stomach. 20th,—vomiting continues; hiccup at intervals; body open—to purging; eyes yellow; tongue furred and parched; skin cold and damp: medicines continued. 21st,—vomiting of black matter; body open; intellect confused; pulse weak with cold perspiration; countenance sunk. Died in the evening.

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### *Island of St. Eustatius.*

The island of St. Eustatius, twenty-nine miles in circumference, lies at the distance of three leagues north-west of St. Christopher. It consists of two pyramidal mountains, viz. a greater and a smaller with an intervening plain, which, stretching between the northern and southern sea, constitutes the centre and productive part of the island. The town, which is the station of the troops, stands on the south part

of the plain, near an abrupt bank of sea coast, the elevation of which is about fifty feet perpendicular above sea level. The actual site is dry: the plain between the mountains inclines from the south northerly. The shore at the north is low, the soil boggy—in wet weather almost swamp. The exhalations which arise from it, carried directly to the site of the town by the currents of wind which sweep through the interval between the mountains, strike with force in consequence of the greater elevation of position, and thus probably act with more injurious effect than they otherwise would do.

The fort and barrack, in which the troops are quartered, are near the margin of the southern bank. The barrack is better constructed, as a barrack, than the generality of barracks in the Windward and Leeward islands. There is no open swamp in St. Eustatius: the northern shore is saturated with moisture to the condition of bog in the rainy season; the exhalation from it, as already observed, is wafted to the site of the town. The troops, which form the garrison, suffer occasionally from fever of an obscure remittent or gastric type; slow, for the most part, in its progress, and very precarious in convalescence.—I subjoin two cases, as in some degree illustrative of its history.

#### CASE I.

*February 22nd, 1812.* Richard Crompton, twenty-fifth regiment of foot, of a relaxed habit and pale complexion, was seized at six o'clock in the morning of the 22nd with symptoms

of fever, viz. quick and strong pulse, increased heat equally diffused, pain of the head—not severe, skin hot and dry, tongue furred, vomiting troublesome: emetic. 23rd,—symptoms abated in the morning. Evening,—exacerbation of fever: aq. ammon. acetat. and liquor. volatil. C. C. 24th,—symptoms less violent; pulse not much different from natural; tongue white; skin moist: jalap and rhubarb, each fifteen grains. 25th,—no complaint: decoction of bark. 26th,—the same: decoction of bark continued. *March 1st*,—paroxysm of intermittent fever: emetic. 2nd,—no fever. 3rd,—paroxysm returned—not severe. 4th,—arsenical solution. 11th,—infusion of quassia. 12th,—arsenical solution continued. No fever: anasarca swellings of the face and legs: no distinct paroxysm of the fever. The arsenical solution, with occasional doses of jalap and chrystals of tartar until the 20th, when he was discharged from hospital.

#### CASE II.

*April 13th, 1812.* John Nelson, twenty-fifth regiment of foot, aged twenty-six, of bilious habit, was seized with a paroxysm of fever in the evening of the 13th and admitted into hospital on the 14th. The paroxysm began with shivering, followed by sensations of heat, nausea, head-ache and pains in all parts of the body; the tongue white; the body costive; the pulse quick and small. The body was opened by calomel, followed by sulphate of magnesia: saline effervescing draughts were then exhibited occasionally, with calomel and James' powder, gr. v. of each every third hour. 15th,—the symptoms continue, or rather increase; vomiting is troublesome; head-ache is distressing,—intellect not disordered. Calomel and James' powder continued: half an ounce of mercurial ointment rubbed into the legs and thighs during the day: clyster: cold, applied to the head by means of wet cloths. 16th,—vomiting at intervals; pulse quick; pains severe: medicines continued. 17th,—partial remission; head relieved; skin cool and moist; tongue moist; gums affected by mercury; intellect not dis-

ordered; weakness considerable: medicines continued; blister to the head. 18th,—less pain; pulse quick and weak; anxiety at stomach; bark rejected in every form; heat below the standard of health,—the skin in fact cold with partial sweat; sighing frequent and deep, with sense of weakness or inability. Mercury omitted; infusion of bark rejected; blister to the stomach. 19th,—appearances of coma—with hiccup and low delirium; mouth affected by mercury: infusion of colombo; wine—eight gills in twenty-four hours. 20th,—sleeps much and heavily; somewhat delirious when awake; pulse quick; thirst great; vomit at intervals; pulse feeble; eye clouded; blisters to the inside of the legs: wine continued. *Note.*—This person recovered; the progress to recovery was slow.

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### *Island of St. Martin.*

Philipsburgh, which is the capital and principal station of the troops which garrison St. Martin, stands on the margin of a deep bay formed by two projections of barren land: the one on the north is mountainous; that on the south is elevated, but not elevated to the height of a mountain, or even hill. The town occupies part of a belt of sand, which is about four hundred paces in breadth, stretched north and south between the sea and a nearly circular lake of salt water, which is about one mile in diameter and enclosed on three sides by mountain of unequal height, the circle of mountain so depressed at the north-west and south-west as to leave passage of easy communication to the interior. The belt of land, on part of which the town is built, does

not exceed three quarters of a mile in length; it is so little elevated as not to be secured from over-flowings of the lake in the heavy and long continued rains, which occur not unfrequently in this island in the autumnal months: it consists of pure white sand—without admixture of mud or clay.

The climate of St. Martin is said to be pleasant at most seasons of the year. The capital, Philadelphia, is comparatively agreeable as a sea coast town; the interior country is delightful, the scenery beautifully picturesque, and reported to be upon the whole healthy.—The native inhabitant seems to possess energy and activity in a degree superior to most of the inhabitants of the West-India islands; whether owing to climate, or moral causes I do not take upon myself to determine.

The garrison of St. Martin consisted, from the year 1810 to the year 1814, of near two hundred of the 25th regiment of foot, with a small detachment of the corps of Royal Artillery. The town Philadelphia, as the residence of the Governor, was the head quarters of the troops: Fort Amsterdam, the work erected at the point of the promontory, which forms the southern boundary of the bay, was occupied by detachment. The troops, stationed at Philadelphia, are quartered in houses which have been erected for private dwelling. The houses are commodious houses—better habitations than usually fall to the lot of soldiers: they are objectionable, as standing in the centre of a town and open to all kinds of intercourse with the people. The house

which received the sick had also been built for private dwelling; no reasonable objection could be made to it as an hospital. The site of Fort Amsterdam, which is the strong hold of the island, is well chosen for salubrity. It projects considerably into the sea, and it is not under the range of noxious exhalation from contiguous swamps. The barrack accommodation is good: the detachment is under surveillance; and, being well lodged, it sends fewer men to hospital, in proportion to numbers, than the barracks at head quarters which cannot be guarded from improper communications.

The forms of disease, which appear in the hospital returns of the island of St. Martin, are not of great variety. Fever—continued or remittent, dysenteric, pneumonic and ulcerative, are the principal. The dysenteric form is generally double in number to the form more strictly called fever; the pneumonic occurs occasionally; the ulcerative is high—often equal, or more than equal to the whole hospital list, particularly in the drier months of the year. The febrile form—continued or remittent, is often rapid in its course, even so rapid as to terminate fatally in thirty-six or forty-eight hours; and seldom, where the termination is fatal, to go beyond the sixth or eighth day. The table, No. I., of the annexed return may serve to give the reader some idea of the relative salubrity of St. Martin, or rather Philadelphia, with other stations in the Windward and Leeward islands.

## CASE I.

*December 1st, 1813.* Andrew Lyers, twenty-fifth regiment of foot, aged thirty-one years, sanguine temperament, habit somewhat full, was attacked with symptoms of fever at ten in the morning of the 1st instant, and admitted into hospital on the morning of the 2nd. He then complained of violent pain in the loins and in the legs; the pulse ninety—full and soft; tongue slightly furred; heat of the surface considerable; skin dry; thirst great; body open. Calomel gr. vi.; warm bath. Evening,—calomel and antimonial powder. 3rd,—vomiting of viscid bile; pulse eighty—soft and feeble; skin soft; heat not increased: blister to the epigastrium; oz. i. of acetated water of ammonia every hour; warm bath. Evening,—copious perspiration; pulse soft and feeble. 4th,—vomiting frequent—bile of a dark colour; pulse ninety—soft and feeble; tongue brown; skin moist; heat not increased: one drachm of mercurial ointment rubbed into the thighs twice a day; calomel gr. vi., internally. 5th,—skin somewhat yellow; vomiting continues; pulse ninety—very feeble; surface moist; heat below natural; stools very dark: frictions with mercurial ointment repeated; blister to the epigastrium. 6th,—vomiting incessant—the matter ejected black and viscid; pulse scarcely perceptible; skin cold and clammy: frictions continued. 7th,—died at four in the morning. *Dissection.*—(It is presumed not made with sufficient care.) No marks of disease appeared in the brain or its membranes; numerous inflamed spots were visible in the interior of the stomach; the upper portion of the duodenum of similar appearance; a quantity of black matter in the stomach; the contents of the gall bladder very black and viscid.

## CASE II.

*February 21st, 1814.* Classon, twenty-fifth regiment of foot, aged forty-four, habit spare, was attacked to-day with slight head-ache: he had been troubled with purging for two

days past. The pulse was small and feeble—not more than seventy-eight strokes in a minute. Solution of salts in the morning; calomel and James' powder at bed-time. *2nd*,—head-ache gone, pulse seventy, tongue clean, body open; purged: calomel and James' powder during the day: opiate confection at bed-time. *3rd*,—appears to be in stupor, speech incoherent, pulse seventy, tongue clean, skin cool and soft, stools less frequent; large blister to the head, calomel and James' powder continued. *4th*,—delirious, pulse seventy, bowels open—evacuation natural in appearance: a draught, consisting of laudanum and spirits of hartshorn, every third hour. *5th*,—delirium continues, pulse seventy-eight—weak and feeble; draughts continued. *6th*,—delirious, pulse one hundred—very feeble. Died suddenly about eight in the morning. *Dissection*.—Effusion of lymph in considerable quantity under the membranes and in the insterstices of the brain: nothing remarkable in any other part of the body.

### CASE III.

*October 28th, 1813.* Sergeant Fitzpatrick, twenty-fifth regiment of foot, aged thirty, temperament sanguine, was attacked with symptoms of fever at six in the morning, and received into hospital the same day. He vomited incessantly; the pulse one hundred—small, soft and irregular; the tongue clean and moist; the skin soft; the heat little increased: blister to the epigastrium; calomel, as purgative. *29th*,—vomiting abated, body opened; calomel and James' powder. *30th*,—no material alteration; calomel and James' powder. *31st*,—delirious,—violent; pulse 100,—irregular and small; tongue clean and moist; skin soft; thirst moderate; heat natural: blister to the head; an ounce of acetated water of ammonia every other hour. *November 1st*,—delirious and extremely restless during the night; the skin now (six in the morning,) becoming moist; the pulse 110,—full and expanded. *2nd*,—sweated copiously in the night; intellect clear; pulse 86,—full and expanded: crisis perfect.

*Island of St. Thomas.*

The island of St Thomas lies in latitude 18 deg. and 22 min. north. The town St. Thomas, the capital of the island and principal station of the troops, stands at the bottom of a deep bay, formed on the east by the retrocession of a cluster of mountainous height, on the west by the projection of an irregular ridge of rock resembling an artificial mound in its appearance. The town, placed as it were in the pit of an amphitheatre, is covered on the rear by a ridge of mountain of six or seven hundred feet elevation above sea level. Ridges of varied form, with intervening depressions, descend from the mountain towards the sea, and terminate in points near the sea beach. The depressions between the ridges are boggy,—actual bog near the beach in the season of the greater rains. The principal of the streets run east and west, parallel with the shore: the houses occupy the obtuse extremities of the ridges at one place, the boggy depressions at another. The wharfs and warehouses, and even many of the private dwellings, are raised upon piles or other artificial foundation, particularly near the centre of the bay and scene of mercantile activity.

A castle or fort, intended to protect the town from hostile invasion, is erected on an eminence of marly rock at the eastern angle of the bay, close to the shore. The barrack is near the castle; the hospital, for sick, north of the castle, at the base of

the height which forms the eastern side of the bay. The whole environ of the barrack, with the exception of a few staring surfaces of rock, is absolute swamp or quagmire in the rainy season. The space, which intervenes between the south-west angle of the town and the peninsular projection which forms the west side of the bay, is much in its natural state—uncultivated and boggy, some part of it absolute swamp.

The height of the projection, which forms the west side of the bay, appears, as judged by the eye, to be about two hundred feet above the level of the sea. The site was considered, when the island was formerly in possession of the British, to be eligible for the erection of works for the defence of the harbour and command of the town. Works were accordingly erected with that view about the year 1800: they were dismantled after the peace of Amiens. Besides a military work, barracks were built on the peninsular for the accommodation of troops; and, as they were not demolished when the fort was dismantled, they have been occasionally occupied, especially during the autumnal months, since the recapture of the island in 1808. The cluster of mountain, which forms the east side of the bay, is broken and irregular; and is from four to five hundred feet in height. A small barrack and a battery of some guns were erected at the south-west point of it, for the defence of the entrance into the harbour. The station was found to be unhealthy; so destructive to the life of those

who did duty at it, that the General in command thought proper to abandon it. The cause of the sickness was then ascribed—and apparently with reason, to exhalation from a lagoon which lies about three quarters of a mile to windward:—the common, or eastern sea breeze which passes over the lagoon, strikes with impulse on the site of the barrack and point where the sentinel is ordered to stand.

The island of St. Thomas is, upon the whole, of a very irregular surface, viz. hills or mountains,—some in cone, others in ridge form; intervening alluvial vallies, circular bottoms, or other irregular boggy depressions, where water stagnates, or makes progress that is scarcely perceptible. The soil of the island does not appear to be fertile: the mould is coarse brick-coloured mould, with a large proportion of stone and gravel; the flats or vallies are chiefly alluvial bog. The temperature of the air, at least the heat at the margin of the bay where the town is built, is usually high even for a tropical climate,—sometimes so high as 94. The changes are sudden; and exclusive of suddenness and extent of range in the thermometer, the impression made upon the feeling is often disagreeable—oppressive in a peculiar manner as if the atmosphere were loaded with principles restrictive of the activity of life.

There is no position in the environ of the town which can be considered as healthy. Some are less unhealthy than others, as less exposed to the

influence of winds which blow over swampy surfaces: there is no one, within the amphitheatre in which the town stands, that can be considered as eligible for a convalescent quarter. The central ridge in rear of the town, of a lower temperature by at least three degrees than the town itself, and not exposed to the current of winds which pass over swampy surfaces, may be supposed to be relatively healthy: as such, it might be selected as a station for the European troops which are destined to garrison the island. The question lies, in the present case, between the value of a given quantity of military life and the value of the returns of the custom-house. In such case, a commercial nation might be expected to consider, in how far the sovereignty of the island and the protection of the town of St. Thomas as a depot of merchandize, could be assured by stationing the principal part of the European military at the summit of the height that overlooks the town. The position is presumptively healthy:—little loss by sickness would be incurred in it, and the distance from the town is so inconsiderable that aid might be on the spot in half an hour after alarm was given—as soon perhaps as it could be obtained as things now are.

The principal barrack at St. Thomas is near the castle. The locality precludes the possibility of making the dwelling agreeable; the form of construction is not upon the whole objectionable. The barracks which have been erected on the peninsular ridge, which forms the west boundary of the bay,

do not appear to be exposed by position to the direct influence of marsh exhalation. They are British built; and, like most British built barracks, they are narrow sheds without galleries, even without jalousied windows, consequently exposed to great vicissitude of temperature.

If a person take the trouble to throw his eye over the surface of the island of St. Thomas, particularly the site of the town and the stations where the troops are quartered, he cannot be otherwise than prepared to expect sickness to the full extent of what occurs. The periodic forms of fever, the dysenteric and ulcerative, or sore leg predominate. The periodic is upon the whole the most common and the most important on account of its dangers; the dysenteric occurs sometimes as primary, frequently as secondary; the ulcerative, or sore leg is conspicuous,—the cure of it tedious, and often troublesome. The periodic fever of St. Thomas is often such as may with propriety enough be termed malignant; that is, liable to sudden untoward changes not within the ordinary rules of calculation; an occurrence more common in the latter months of the year, during the prevalence of cold northerly winds, than at other times. The cranial cavity is the part which, in such case, ordinarily sustains the greatest share of the morbid act,—an act manifested on some occasions by coma, stupor, or convulsion, which usually terminates in death; sometimes by delirium, not unlike mania or insanity, which usually terminates in recovery.

Delirium, resembling insanity, is a more common form of the action of a febrile cause at St. Thomas and Santa Cruz, than in any other of the islands in possession of the British: it is remarkable that the disposition there acquired adheres long to the habit after the subject is removed to another station. The fact was distinctly exemplified in the year 1815, when the 96th regiment, which had been quartered in these islands for some years, was brought to Barbados. A great proportion, among those of this corps, who were attacked with fever at Barbados, manifested forms of mental derangement which were not usual among the other febrile patients then in the garrison. The febrile heat, increased thirst, dryness of the tongue, aversion from food, &c. ceased with the appearance of the maniacal symptoms: fever, in the usual acceptation of the word, could not be said to exist. The intellect was deranged in a variety of ways: it continued deranged, with risings and fallings at intervals, for three or four days or more: the mental disorder then disappeared suddenly, and the patient expressed himself to be free of complaint with the exception of feeble ness, or more than usual desire to sleep. Where the cranial cavity was the part of the body prominently affected, death or recovery was, for the most part, rapid, often precipitate: where the chief force of the morbid act was manifested on the functions of the organs that lie within the abdominal parietes, the course was often protracted, the cure imperfect. The return in Table, No. I.,

shows the relative salubrity of St. Thomas from 1808 to 1814.

## CASE.

*December 23rd, 1813.*—Patrick Rooney, 96th regiment of foot, aged twenty-nine,—thin in habit, melancholic in temperament, was attacked at 10 o'clock in the morning of the 24th with chilliness, pains of the loins and lower extremities, impaired sensibility, &c. The sensation of chilliness subsided gradually; the hot stage commenced, accompanied with tremor of the limbs, succession of the whole body, and a good deal of mental alienation. He nauseated much, but did not vomit; the pulse was small, contracted and irregular. At eleven o'clock, after repeated fruitless attempts to vomit, the warmth became general over the body, the mental alienation entirely disappeared,—a sense of heaviness in the head with clouded vision remained. At a quarter before twelve, perspiration was observed on the forehead; it soon became general and profuse. The patient was now calm; but he complained much of his head and eyes, and was unwilling to speak. A copious evacuation by stool; the tongue moist, but foul; no appetite for food; the pulse full and expansile:—remission in the afternoon. *25th*,—about four o'clock in the afternoon, accession of fever, general sense of uneasiness, violent headache, thirst, anxiety at the præcordia, burning heat on the surface, stupor, confusion of intellect. *26th*,—partial remission in the morning. At eleven o'clock,—restlessness followed by stupor and insensibility,—glassy appearance of the eye; the pulse frequent, small,—intermitting; sweat cold and clammy. Died at eight o'clock in the morning of the *27th*. *Dissection.*—Little or no appearance of inflammation or congestion in the blood vessels of the dura mater; the ventricles of the brain distended with limpid fluid; the spleen enlarged; the mesenteric glands large and somewhat indurated; no appearance of disease in the cavity of the thorax. *Note.*—Emetic: camph.: opium and James' powder: blisters to the head, neck and stomach: warm bath, &c. No sensible effect from treatment.

*Island of Santa Cruz.*

The island of Santa Cruz, about thirty miles in length and eight in breadth, lies in latitude 17 deg. and 50 min. north. Some part of it is hilly; no part of it is mountainous; much of it is level and highly cultivated. The cultivated lands are divided into lots or equal portions; and, as the lots are not large, two, three or more are occasionally thrown together for the purpose of forming sugar estates of magnitude. The soil of the level lands is generally light, open, gravelly and not unfertile. The northwest and the whole of the east is hilly:—the east is little cultivated; it is of a soil that is apparently little productive. The general feature of Santa Cruz is tame, compared with the features of most of the islands within the tropics. A considerable portion of the surface is level and saturated with moisture during the season of rain;—in some places it is quagmire or bog. Santa Cruz has only a few small streams of running water; it has several lagoons or creeks near the sea coast, particularly in the vicinity of Christiansted and Frederichsted, the exhalations from which are offensive to the senses, and injurious to health in common with other swamp exhalations.

The temperature of Santa Cruz is upon the whole high as the temperature of an intertropical island. It was not observed by the author to be, at any time, under 78 at Christiansted in the month of May, 1812: it was often as high as 88. But,

though high in degree, it was not, except in the vicinity of the lagoons, disagreeable to sensation as heat usually is when charged with exhalation from swampy surfaces. The temperature is somewhat higher at Frederichsted than it is at Christiansted ; and, while higher, it is also more oppressive to the feeling. In the country, particularly on the north-east coast and on the gentle elevations of the interior, it is moderate at most times : the breezes are strong, not violent.

The town of Christiansted, the capital of the island, stands at the margin of a bay, on a declivity of gentle inclination. The actual site of the town, in so far as can be judged by appearances, might be considered as not unfavourable to the health of the inhabitant. The soil is dry, viz. slate or gravel. The site is elevated, particularly at the eastern extremity : no part of it is depressed, except at the shore, and in a channel at the west called Waater Gade, the soil of which is alluvial. A series of creeks or lagoons, with intervening hills or eminences, extend eastward from the town along the coast. The one adjoining to the town has been converted, by attempts to drain and improve, into a foul swamp, offensive in smell and noxious to the health of those who lie within its sphere. It is windward of the more elevated part of Christiansted, directly windward of the principal military barrack ; and sometimes, according to the inclination of the breeze, windward of the anchoring place for shipping.

Frederichsted, a considerable town at the west end of the island, is situated upon a plane gently inclined to the sea. The harbour is under the protection of a castle or fort, which is erected near the beach on a dry site, leeward of an extensive lagoon, the exhalations from which are offensive at all times, at certain times pestiferous.—The garrison of Frederichsted is at present supplied by detachment, relieved once a fortnight.

The principal house, occupied as a Barrack for British troops, was built under the Danish government as a sick hospital for seafaring people. It is not unsuitable, in form of construction, for the purpose intended, or even for the purpose to which it is applied ; but it is unluckily, or unscientifically placed leeward of an offensive swamp, even exposed to swamp influences artificially augmented in force by the elevation of its position. The other house, occupied by troops, stands in the centre of the town. It is an excellent dwelling-house with numerous conveniences, affording more comfort to men, women and children than any other military quarter within the command.

The house, appropriated to the reception of the sick, was built originally as a house for private dwelling. It stands near the west end of the town, on the base of the central ridge of height which covers the town on the north, at the elevation of two hundred feet or more above the sea level, and about half a mile from the sea coast. The house consists of several apartments.—By the zeal and

diligence of the medical officer, who has taken his abode in it, it is now a commodious and comfortable hospital.

The island of Santa Cruz might be supposed, from the cursory sketch that is given of its general feature, to occupy only a middle station in what may be termed the health scale of intertropical islands. Some parts of it, particularly the stations where the troops have been quartered, are directly exposed to the impulse of winds which blow over lagoons or swampy surfaces ; and, in consequence of that or other less obvious cause, sickness has been severe on some occasions during the time the island has been in possession of the British. Santa Cruz will probably never be a British possession, except during war ; but, as it is probable it may be again seized when war occurs, I take the liberty to say that, if it be desired to maintain the sovereignty of the island and collect its revenue at the smallest possible expense of British life, the object, there is reason to believe, may be attained by stationing the principal part of the force at the summit of the height which covers Christiansted on the north ; a position at a temperature of three degrees below that of Christiansted, not more than one mile distant from head quarters, and presumptively healthy, as dry in itself and exposed to no adventitious noxious influence by currents of wind.

Periodic fever, remittent or intermittent, is the most common form of disease which appears at Santa Cruz. It is often a disease of violent symptoms and

of a rapid course, viz. fatal in twenty-four hours, in two days, often in three days; and seldom, during the reign of what may be called epidemic influence, protracted beyond the seventh or eighth. At other times, it is of slow movement and protracted duration; so little decided in its course that it is often difficult to say, even for so long a period as six or eight days, whether the tendency is to recovery or death. The patient, in such case, lies in a state of dozing torpor, scarcely able to articulate so as to express his wants, rarely with marks of mental aberration. The evacuations by stool are usually bilious and loose, passed involuntarily, not unconsciously; the pulse is rarely frequent, as a febrile pulse; it is ordinarily weak and depressed; the thirst is usually moderate; the tongue rough, dry and sometimes blackish; there is no desire for food; spoon meat, viz. sago, arrow-root, with wine and sugar, &c. is taken without aversion. At the expiration of the first week, sometimes at the expiration of the second or third, the living power begins to show signs of emergence. It finally emerges; health is slowly restored, but rarely to its pristine state.—Besides the form of fever now noticed, which is common in Santa Cruz, particularly among those who have been stationed at Fredericksted, the endemic of the island not unfrequently manifests its chief force on the cerebral organ, sometimes indicated by violent delirium, coma or convulsion which terminates in death; sometimes by mental aberration, like insanity, without ostensible signs of fever, and rarely

mortal. The insanity subsides after a short continuance; it leaves the subject in bodily health, but weak and incapable of exertion. The dysenteric form of fever occurs occasionally in Santa Cruz as primary; it is not rare as secondary, especially among those who have done duty at Fredrichsted and suffered from the fever which prevails at that place. The ulcerative form is common: it constitutes one-fourth of the sick list on most occasions.—The returns in table No. 1, serve to give the reader a general idea of the relative salubrity of Santa Cruz.

#### CASE I.

*March 6th, 1812.*—George Lee, ninety-sixth regiment of foot, aged twenty-nine, spare habit, sanguine temperament, was attacked with symptoms of fever at five in the evening, and admitted into hospital on the 8th. The pulse was then 120 in the minute; the skin hot; the thirst great; the tongue foul; the eye surcharged with red veins; pains in the loins, knees and fore part of the head severe; vomiting incessant; constant jaetation; urine bilious; bowels torpid. Bled to the amount of thirty ounces;—relief immediate. Ten grains of calomel, followed by a solution of salts in divided doses: head shaved and covered with wet cloths: blister to the stomach: cold affusion when the skin was hot;—followed by relief, viz. cessation of thirst and irritability. 9th,—pulse 100 strokes in the minute—thready, intermitting; wildness in the eye; head-ache severe. Evening,—delirium: blister to the neck: calomel at bed-time. 10th,—delirium violent; pulse 130; no vomiting. Bled on both sides, from the temporal artery, to the amount of twenty ounces or more: fainting ensued from the bleeding, followed by sleep and profuse perspiration. Noon,—calm, free from fever; the pulse 80—soft and regular. 11th,—perspiration

continues; slight pain over the eyes; sense of soreness.  
29th,—discharged.

## CASE II.

*December 27th, 1813.*—Spry, of a puny habit, was attacked in the evening with head-ache, cold and heat alternately, followed by intense heat of skin, thirst, difficulty in breathing, &c. The countenance is dejected, the eye of a yellowish tinge; there is sense of fulness at the stomach,—nausea, vomiting of dark bilious matter; pulse one hundred strokes in the minute—small and contracted; urine scanty; body bound; tongue white. Calomel gr. viii.: laxative clyster: beverage, acidulated with chrystals of tartar for drink. 29th,—four dark coloured stools after the injection; head-ache and other symptoms somewhat moderated; nausea still troublesome; bile ejected; pulse 96—small; urine clear. Calomel repeated: anodyne diaphoretic draught at bed-time. 30th,—calomel operated; copious evacuation of dark bilious matter; sleep; profuse perspiration during the night; the eye less tinged; the urine turbid and high coloured; the body open; the skin preternaturally hot: cold affusion:—relief; pulse 80—soft; half a drachm of bark three times a day, with twenty drops of vitriolic acid in each dose: opiate at bed time. The bark did not agree with the stomach,—nausea,—vomiting: saline draughts. *January 10th, 1814,*—no occurrence of consequence since the 31st of December, except hemorrhoidal swellings which are very distressing. 20th,—frequent paroxysms of fever,—not severe;—moderated by cold affusion: hemorrhoids painful. *March 1st,*—repeated relapses of fever—not severe; weak; distressed by hemorrhoids. *July 23rd,*—no formal paroxysm for some time; the abdomen and legs swelled; ana-sarcous throughout: ordered to Europe.

*Island of Antigua.*

The island of Antigua, fifteen miles in length and ten in breadth, the circumference indented with bays and harbours, lies in latitude 17 deg. and 7 min. north. Numerous small hills variegate its surface, none of them exceeding a thousand feet in height ;—the eminences mostly rock or gravel. The vegetable soil has much of the character of morass ;—such as is calculated to retain the rain which falls upon it until the heat of the sun raise it in vapour. Some gutters and boggy channels for water present themselves at different places on the surface of the island : there is no river or brook any where ; and no good drinking water to be obtained by sinking wells as in the island of Barbados. The troops and the inhabitants are therefore obliged to depend on the bounty of the clouds for their supply ; and, as that sometimes fails, the inconveniences are great ; the injury to health from the use of what is bad, as less acceptable to the digestive power than purified rain water, is often considerable.

There are more barracks and more stations for troops in the island of Antigua, than in any other of the British islands of the same dimension. The town St. John, which stands upon a gently inclined plain at the bottom of a deep and wide bay, is the capital of Antigua. The south side of the bay is bounded by a cluster of hills, or eminences of different height and different form, intersected by

vallies or depressions of varied form but generally of small extent. The north side of the bay is open and level—of a morass soil ; where not cultivated it is generally bog. The back part of the town, towards the interior, stands upon a base of rock, at an elevation of fifty feet or more above the sea level; the front is nearly level with the sea beach; the general character of the soil morass. The temperature of the atmosphere is high at St. John in every quarter of the town,—higher near the shore than towards the country; higher and more oppressive on the north than on the south.

English Harbour, the second town in Antigua in size, the first in importance to the British government, occupies the foul shores of a land-locked harbour. The shores are muddy, offensive to sight and smell; almost as offensive as any in the West-Indies, and, at times, not less destructive of health than the most noted. The air is heavy and oppressive at all times; the breezes are irregular, sometimes feeble, sometimes strong; even violent, as directed through channels that wind among the heights which encircle and form the harbour. An extensive basin called Falmouth Bay lies on the north side of English Harbour, separated from it by a peninsular projection, or rocky mound thrown into the bay in such manner as to form, with the projections on the south, a harbour that is considered to be secure from every violence of wind. The projection is known by the name of Middle-ground. It is considerably expanded at the western

extremity, and considerably elevated, viz. to five hundred feet; it contracts towards the east, or interior, and sinks to within a little of the level of the sea, forming an isthmus, so narrow and so little elevated, that water communication might be made between the bay and the harbour at small expense of labour. The mound, or middle ground, which is there contracted and depressed, expands considerably, and rises to the height of about two hundred feet above the sea level as it tends towards the interior; it again, at the distance of three or four hundred yards, sinks to the level of the plain which bounds the bay of Falmouth; thus resembling an insulated projection or mound of irregular height dropt into the sea, as it were, by accident. The greater part of the shore at Falmouth Bay is flat and muddy, but less offensive in the quality of its soil than the part near English Harbour; and, while less offensive, open and expanded, it is less exposed to the tortuous and impetuous winds which sweep among the dwellings which cover the lower parts of the middle ground, or which play among the ships which are moored or anchored in the harbour.

The stations for troops have been fixed at this, as at most other places, for purposes of convenience rather than with primary regard to healthiness of locality. The first of the barracks which meets the eye, in making a medical survey of the island of Antigua, occupies a small island, on the north side of the harbour at St. John, called Rat Island.

It is connected with the main by a natural causeway, or bank of shingle. The island consists of a mass of rock, about forty feet or more in height,—flat at the summit in table form. The barrack consists of a single range of building of two stories—without gallery. The building runs east and west, according to the greatest extent of the island. It was at one time occupied by British troops, and it was then said to be unhealthy :—as exposed to the direct impulse of winds, which blow over extensive tracts of a morass soil, it could not be supposed to be otherwise.

The barrack, at St. John, stands in the rear of the town at an elevation of sixty or seventy feet above the level of the sea : it stands on a spongy and soft soil, intermixed with stone and gravel. The house is in itself a strong stone building, lee-ward of a pond and foul ground. Exposed to the influence of causes which are usually considered as causes of disease, and protected by no provisionary means, in form of construction, from their direct impulse, it might reasonably be supposed to be an unhealthy quarter :—as appears by the hospital returns, it has been so in fact. It is now far advanced in decay : it is hoped it will soon be uninhabitable, so that there be no chance of its being again filled with British troops :—it is ill placed and ill constructed as a military barrack.—Circumstances may render it necessary that troops be stationed in the vicinity of St. John ; and, in such case, a platform or inclined plain, on the west of Drews-height,

presented itself to the author as the most eligible site for the erection of barracks and other buildings that may be required for their accommodation. The site is dry in itself: it is moreover protected, by the interposition of the height, from the direct impulses of the winds which sweep the boggy plains on the east.

Shirley-height, which covers English Harbour on the south-east—Middle-ground, interposed between that harbour and Falmouth Bay—and Monks-hill, which is directly interior of the bay, at the distance of little more than a mile from the shore, are at present (1812) the principal military stations on this island. Shirley-height appears, as judged by the eye, to be about seven hundred feet above the level of the sea; Middle-ground five, and Monks-hill six. The soil of the whole is dry in itself, viz. rock or gravel: water does not stagnate on the surface near the immediate site. The winds are strong at all these stations—often violent: they blow from the sea coast or lower region; and, though strong, they do not pierce the relaxed habit unpleasantly by coldness, as happens where they descend from the interior mountains. They do not, as they strike upon these stations, pass over grounds that are particularly noxious by their exhalations, and they do not therefore, in ordinary circumstances, appear to carry with them the causes of fever in a state of concentration. The source of the disease which belongs to English Harbour, lies between Shirley-height and Middle-ground. The exhalation

tion which arises from it is pestiferous at particular periods; but it does not appear to ascend to the heights or stations of the troops; being, it is reasonably supposed, carried out to sea by the currents of wind which play within the banks of the harbour. Shirley-height and Monks-hill are ranked among healthy stations for British military in the West-Indies. But, healthy as they are in the present estimate of things, there is reason to believe that the salubrity would be improved, as it is evident that the convenience and comfort would be greatly increased, if the margins of the ascent, at the crown of the heights, were planted with wide spreading trees for the purpose of breaking the violence of the winds, which is sometimes very annoying.

The barracks on Shirley-height, Middle-ground and Monks-hill are not so constructed originally as to give comfort to the inhabitant. At the present time (1812), the ample space, from the low numbers of the garrison, makes amends for other defects: it may perhaps be considered as the main cause of the unusual healthiness of the York Light Infantry Volunteers, the only troops now stationed in the island.—The house appropriated to the reception of the sick is defective as an hospital: it is in fact no other than a common barrack of shed form. But, as ample space is allowed to the individual, the air is pure, and mortality has been on a comparatively low scale for some time past. The corps which now forms the garrison is composed of foreigners, chiefly

deserters from the French army. The French have a good primary education ; and it is but justice to say that they are, for the most part, of correct moral habits.—The return, in table No. 1, shows the relative proportion of mortality in Antigua from 1803 to 1814.

The hospital returns, which are preserved in the office of the Inspector of Hospitals at Barbados since the year 1803, furnish evidence that sickness has sometimes been high in proportion to the number of the troops in the island of Antigua, and that mortality has sometimes been high in proportion to the number of the sick. The returns, it is to be regretted, are not explicit in stating the relative proportions of the sick to the strength, at the different stations where the troops were quartered ; the evidence is however conclusive that the barrack at St. John had generally the strongest hospital list in proportion to its numbers. The endemic disease of Antigua assumes variety of form as in most other islands in tropical latitudes.—Fever—continued—intermittent or remittent, dysenteric, pneumonic, rheumatic, ulcerative, or sore leg are the most common. Besides the ordinary forms of acute disease, the hospital returns for this island usually present, in the period alluded to, a long list of cachectic, viz. persons invalid or imperfectly cured,—a condition more connected with medical treatment than circumstances of climate. The febrile form—continued, intermittent or remittent, is the most common : the ulcerative is the next in

frequency,—it even sometimes exceeds: the dysenteric is not rare as original; it is common as secondary: the pneumonic and rheumatic forms are frequent at Shirley-height and Monks-hill. The fevers are sometimes slight in degree, and cease as it were of their own accord; sometimes they are violent and rapidly fatal; sometimes slow and protracted.

#### CASE I.

Monks-hill, (month omitted) 15th, 1812.—Dumeau, York light infantry Volunteers, aged 28, full habit, attacked with symptoms of fever to-day. He complained of pain in the back and in the calves of the legs, giddiness of the head, sickness at stomach and aversion from food. The commencement was marked by rigor, to which succeeded heat of a high scale. The eye is now dull; he is unwilling to speak; the respiration is short and hurried; the pulse one hundred strokes in the minute—small and contracted; the tongue is covered with a brown crust; the bowels are constipated;—jactation and restlessness are extreme. Emetic immediately after admission into the hospital: calomel and colocynth. 16th,—antimonial wine, with aq. ammon. acetat. at intervals during the day. Evening,—cold affusion,—forty drops of laudanum at bed-time: pulse more full and expanded; heat rather increased. 17th,—no better; torpid; pulse scarcely perceptible; extremities cold: a large blister to the epigastrium; one between the shoulders, and one to each leg. Ten ounces of wine, half a grain of opium, two grains of calomel and four grains of carbonate of ammonia every hour. Heat somewhat increased—more diffused. 18th,—æther, laudanum and ammonia internally: the surface washed with spirits and water: cold affusion, the heat being high—with delirium. 19th,—laxative clyster: head shaved: shiapisms applied to the feet. 20th,—heat high; delirium violent: cold affusion. Evening,—Died in convulsion:—the body not opened.

## CASE II.

Shirley-height, *March 23rd, 1813.*—Venturino, York light infantry Volunteers, aged twenty-six, spare habit, phlegmatic temperament, attacked with symptoms of fever yesterday and admitted into hospital to-day. The symptoms at the attack were common symptoms—and not violent in degree. There was a sense of lassitude and languor, constant sickness at stomach, sensations of heat and pain at the praecordia, giddiness, dull pain in the head, feelings of general uneasiness,—the tongue white. *25th*,—the skin yellow—cold and clammy; haemorrhage from the nose; tongue black and dry; pulse obscure; sleep disturbed by dreaming. *26th*,—pulse sinking; tremors and convulsion. *27th*,—death occurred suddenly.

*Note.*—From the torpid state of the bowels, which continued throughout, the attempts to procure proper evacuations by stool were ineffectual: such as were procured were scanty and watery, notwithstanding calomel and purgatives, with injections, were frequently administered. Blisters were applied at an early stage to different parts without effect: diaphoretics, opiates, and effervescing draughts were given occasionally;—they were all rejected: only one distinct accession of febrile paroxysm was observed after he was admitted into the hospital, viz. on the *24th*. *Dissection.*—The interior of the stomach corrugated; about six ounces of black matter in the cavity; the villous coat highly inflamed; the liver much enlarged—turgid with black blood; the spleen similarly distended; a quantity of feculent matter in the large intestines; marks of inflammation in the coats throughout; the lungs collapsed; much blood about the heart—in the larger veins:—the brain was not examined.

*Island of Guadaloupe.*

The island of Guadaloupe, forty-five miles in length and thirty-eight in breadth, lies in latitude 16 deg. and 20 min. north. A considerable part of it is mountainous, the height of the highest of the mountains about five thousand feet above the level of the sea. Numerous streams of water, pure as chrystral, descend from the interior to the sea coast through deep ravines, exhibiting, in their descent, a picture that is striking by grandeur, and at the same time pleasing by the beauty and variety of the parts. The island of Guadaloupe is cast on a comparatively grand scale ; the vegetative operations of nature are active and vigorous, the productious are every where healthy and exuberant. The island, the largest in the Charibean chain of islands, is one of the most fertile ; the soil various,—generally good, open and clean, great part of it light vegetative mould : numerous large stones of a sooty black colour are scattered over its surface—strewed irregularly as if they had fallen in a shower from the clouds. The appearance of a sugar plantation is not an object that pleases the eye, unconnected with ideas of profit from a large crop ; some of those in Guadaloupe are on a grand scale,—pleasing to look at by the order of arrangement. The coffee plantation is generally attractive by its appearance : the coffee plantations in Guadaloupe, particularly on the Palmiste, are so beautifully disposed that it is difficult to refrain

from gazing on them while they are within the command of the eye. The air of the Palmiste is delicious in itself; the scene altogether so enchanting that the stranger, who visits it, can scarcely prevail on himself to leave it to descend to the sultry plain. The island of Guadalupe, at least the mountainous part of it, presents a picture of singular grandeur and beauty; and, except at particular points near the coast, its surface does not present the appearance of the existence of causes of disease in unusual proportion; it has notwithstanding been the grave of a multitude of military during the time it has been in possession of the British.

The principal towns in Guadalupe, viz. Basseterre, the seat of Government, and Pointe a Pitre, the entrepos of trade, have been the principal stations of British troops during the time the island has been in British possession. As neither of these places are such as an ordinary observer would deem to be healthy, the salubrity of the island, estimated by the salubrity of the occupied places, does not stand so high, on the comparative scale, as it ought to stand. The town of Basseterre occupies a narrow level of sea beach, with more or less of the bank which ascends from the beach to the plain of the country. The dwelling-houses of Basseterre are generally good: the streets are paved with stone; small channels of pure water are conducted through the greater number of them. The brisk current of the water probably tends to preserve the purity of the air; the appearance of it is agreeable

to the eye: the utility of it, as contributing to cleanliness, is obvious. Besides the refreshment of the air, connected with the rapid current of water in artificial channels, the Place, or widest part of the principal street, is planted with a double row of lofty and wide spreading trees, affording shade, and producing artificial coolness at the hottest hours of the day. The temperature of the air at the lower part of the town is, upon the whole, high; the impression from heat is not oppressive, as it usually is in the vicinity of swamp or foul grounds.—There are ravines or depressions in the bank at different places near Basseterre: the depressions are foul from luxuriance of vegetation and want of culture; there is no swamp, or even bog in the vicinity.

The troops which compose the garrison of Guadaloupe, at least such part of them as are supposed to be necessary at Basseterre, are stationed above the margin of the bank, on what may be called the plain of the country, viz. in Fort Matilda; in a barrack on the Camp de Mars, or Parade which is near the fort; and on what is called the Champ de Boulogne, at the west side of the town. The elevation of the several stations appears to be from one hundred and fifty to two hundred feet above sea level. Fort Matilda, which is the principal military work in the island, is eastward of the town, about three hundred paces interior of the sea bank; westward, and close upon the bank of the Gallion river, a rapid and formidable stream which descends, from the interior mountain on a rocky

bed, through a deep and scarcely practicable ravine. The interior of the fort resembles an oven, or artificial basin of mason-work, so constructed as to collect and concentrate the rays of a scorching sun ; it is consequently hot in the extreme. The floor of the fort, as screened by a parapet wall, possesses no regular ventilation ; but, though not ventilated regularly, it is not secured from the impulses of sudden gusts of comparatively cold winds which, rushing with violence from the ravine in which the Gallion flows, penetrate by the embrasures, gateways and other openings, whirl in eddies within the fort, strike in all directions, and often strike on the heated body of the soldier disagreeably and injuriously. When the narrow barracks, which are piles of wooden building of several stories erected in the centre or pit of the fort, were filled to the extent of barrack regulation, the heat of the atmosphere, as artificially augmented by the form of construction, and farther augmented by undue accumulation of inmates, may be supposed to have been scarcely supportable ; insomuch that, instead of being surprised that the soldiers of the Royal York Rangers were sickly in the year 1810, it is matter of surprise that any of them escaped sickness. The fact of sickness stands on the face of the returns ; it cannot be ascribed with justice to the climate. If not produced solely, it is obvious that it was materially aggravated by artificial causes, viz. by a position at the bank of a deep ravine, by a preposterous form of barrack construction, by accumula-

tion of numbers within the narrow precincts of a military work so disposed in its parts as if it had been purposely designed to augment the force of those causes which are ordinarily reputed to be the exciting causes of febrile disease.

The Camp de Mars, or military parade, occupies a portion of the inclined plain which is westward of the fort. A house adjoining the parade was occupied for some time as a barrack for British troops ; it was upon the whole a most uncomfortable one.— Ill ventilated by form of construction, destitute of natural or artificial protection from contingent gusts of wind, or common vicissitudes of weather, it was, as might have been expected, a sickly one, particularly to the fifteenth regiment of foot.

The Champ de Boulogne, a position in the vicinity of Basseterre, was occupied by troops during the time the island was in possession of the British. The name is given to a ridge of height on the west side of the town : a portion of the military, which composed the garrison of Guadalupe, was placed on it in a hut cantonment. The height of the ridge appears to be upwards of two hundred feet above the level of the sea, gently inclined towards the sea on the south, and towards a broad, rapid and fordable river on the west. The soil of the position is light and open ; the environ, particularly on the west is overrun with weeds and rubbish. The strong winds which descend from the interior mountain through the ravine in which the river flows, strike with disagreeable force on many occa-

sions on the site of the cantonment; and, whether from that or from other cause that is less obvious, the troops stationed at this place, European or African, have not upon the whole been healthy.

The properties of Fort Matilda have been noticed: the causes of the sickness which prevailed in it are sufficiently obvious. The extent of sickness in the Royal York Rangers, which occupied the fort in the year 1810, was great; so alarming and so destructive that the Governor of the island, Admiral Sir Alexander Cochrane, a man of an active mind and benevolent character, assumed, in his capacity as Governor, a new measure in remedy, viz. the erection of a barrack in the interior for their reception. The position of the new barrack was good relatively; it was not the best that might have been found. Instead of one capacious barrack, a series of small barracks, as for half companies, were erected at the plantation Vaultier, about three miles interior of Basseterre. The soldier, so disposed, had comparative quiet; the air was not heated or contaminated by a mass of persons under the same roof. The soil at the new barrack is light and open: the heaviest rains soon disappear from the surface; the declivity is such that they cannot be supposed to stagnate under ground after they openly disappear. The site of the barrack and its immediate environ has no receptacle for stagnant moisture. It is thus healthy in itself; but a bottom or hollow ground, about half a mile on the north-east, irrigated in dry weather for agricultural purposes,

and bog in its own nature in the season of rain, gives out exhalation which is liable to be carried, by the ordinary current of the breeze, to the site of the barrack at Vaultier; the effect of it, there is reason to believe, is not altogether harmless.

The erection of the new barrack at Vaultier was the work of the Governor, Sir Alexander Cochrane. The barrack is only a flimsy structure—built of wood and built under pressing exigence; but, flimsy as it is, it was of more value than if it had been built of marble in the first style of architecture: through means of it, the Royal York Rangers may be said to have been saved from annihilation. During eleven months which that corps inhabited Fort Matilda, four hundred and sixteen men died of sickness; the proportion of death to recovery, among those who were entered on the hospital books, as one to four and one-sixth. During the first eleven months after occupation of the new barracks, the number of deaths sunk to eighty-two, the proportion of death to recovery, among those who entered into the hospital, as one to eleven. The fact is correct as taken from official returns: it is important, as it proves distinctly that, if the saving of military life be desirable economy, the end is attained by attending to the properties of locality, and the mode of constructing quarters for the habitation of troops.—The Royal York Rangers were under the same military discipline, and the same medical superintendence in both the periods referred to.

The civil Governor of the island took upon himself, as now stated, to erect a barrack for British troops on what was supposed to be a healthy situation in the interior. The Commander of the Forces, following the example of the Governor, gave orders that a barrack should be built at Beau Soleil, a position nearly at the same elevation as Vaultier, but still more eligible. Beau Soleil is not exposed to any of those influences which could be supposed to be hurtful to health; unless the damps which arise, on some occasions, from a deep ravine on the west through which a small stream of limpid water rushes rapidly over a rocky bed, be supposed to be so. The barrack in question was better planned than British barracks usually are; the work was upon the whole well executed as a work done by contract. Contract for barracks extends no farther than to walls, roofs, floors, doors, windows, and perhaps hammock-rails: these were not objectionable. The twenty-fifth regiment of foot first occupied it;—the circumstance was a fortunate one. Lieutenant Colonel Light, the officer who commanded the corps at the time, had taste and judgment, with a desire amounting to passion, for the pursuits of a military engineer. The barracks at Beau Soleil offered an opportunity for the indulgence of his propensity; and he in fact indulged it with so much propriety and judgment, as to render the quarter, by the occasional labour of the soldier, the most desirable military quarter perhaps in the West-Indies.—The

history of the military, as it relates to health, forces itself into notice during the British occupation of Guadaloupe. The Governor, Sir Alexander Cochrane gave, as has been seen, an example of what might be done for its preservation by attending to locality in the disposition of troops ; Lieutenant Colonel Light of the twenty-fifth regiment gave, as now said, a further example of what might be done, by a proper application of the soldier's labour, or increasing the convenience, comfort and salubrity of military quarters without expense to the public ; and, what is of more value, with obvious good effect upon health, morals and happiness, while the work was under execution.

The new or colonial barrack at Vaultier, and the British built barrack at Beau Soleil, stand upon the face of an inclined triangular plain, which rises rapidly from the sea coast at Basseterre to the base of the Soufriere, a high volcanic mountain in the interior. The plain is intersected, at various places, by deep ravines, in which streams of chrysal water flow over rocky beds from the interior mountain to the sea. The distance of Beau Soleil and Vaultier appears to be about three miles from the sea coast ; the elevation of the site about seven hundred feet above the level of the sea ; the temperature lower, by three degrees or more, than the temperature of Basseterre ; the winds or breezes for the most part soft and refreshing ; unless near the margins or openings of ravines, where they are often strong, irregular and disagreeable.—

The base of the disease, which prevails among the troops which occupy the barracks in the plain, is febrile—varied in form and intensity as in other parts of the West-Indies, viz. continued, remittent, intermittent, dysenteric, pneumonic, and ulcerative, or sore leg.

Pointe a Pitre, the Port for Grandeterre, a productive sugar district, is the next station for troops in the island of Guadaloupe: it is one of the most unwholesome in the whole chain of islands. The environ of the town is various in soil and aspect, viz. calcarious or marly eminences from fifty to one hundred and fifty feet in height, variously intersected by vallies cleared of wood in some places, covered with wood and brush-wood in most, swampy and offensive in a high degree in all. The atmosphere at Pointe a Pitre may justly enough be said to be pestiferous. It is heavy, oppressive and enfeebling in so marked a degree that a stranger feels, when he emerges from its sphere, as if he were in a new world and under another form of life. The temperature is variable; sometimes hot and suffocating; sometimes chill, the breeze piercing, especially as directed through the ravines and hollow ways which are on the land side of the town. It strikes, as thus directed, upon heights or eminences with accumulated noxious force, an important fact strongly exemplified at the Government-house; which stands on an eminence near the town, and which is so notoriously unhealthy that no white person ventures at present to dwell in it, though it

is in other respects a desirable quarter. The town of Pointe a Pitre is large and populous. The inhabitants, whether white or coloured, are of a forbidding aspect and rude manner, unlike the French in other parts; whether an inheritance from their ancestors who were chiefly sea rovers, or a consequence of the influence of the atmosphere in which they live, I do not pretend to know. The streets are spacious and well paved; the dwelling-houses are generally on a large scale, lofty and convenient: nothing offensive meets the eye within the precinct of the town; the impression of the general atmosphere is, notwithstanding, so disagreeable to a stranger, that he ordinarily congratulates himself when the term of his duty or business permits him to escape from it.

A military post, Fort Louis, established on the summit of an eminence of calcarious rock, at an elevation of fifty feet or more above sea level, and about one mile east of the town, is one of the stations occupied by the garrison of Pointe a Pitre. The site is encircled by swampy vallies, except at the point where it touches the sea. About one mile farther east, another fort, viz. Fleur de Pays, of a similar description, but of a greater extent, is also occupied by detachment from the garrison. It is leeward of extensive swamps and lagoons;—the air is positively pestiferous. A narrow belt of land, of an open and light soil, covered on the land side by a ridge of a calcarious rock as by a shield, and bounded on the other by a sea beach of pure and

white sand, extends from Fort Louis to Fort Fleur de Pays. The impressions of the air in this tract, on the summit of the ridge where the Forts are erected, as also at the extremities of the ridge, are so strikingly different that if a person were blind-folded, he could not fail to know, by his sensations, when he enters the boundary, or when he leaves it to proceed eastward to Grandeterre, or westward to Pointe a Pitre. The forts now mentioned, viz. Fort Louis and Fort Fleur de Pays are unhealthy—scarcely tenable by Europeans.

The air at Pointe a Pitre, and in great part of the contiguous country, is singularly unhealthy, so noxious to the European constitution that few strangers are able long to resist its influence. It is not, I believe, impossible to diminish the force of the noxious effect; but the means through which it could be done, even in a moderate degree, imply great labour and so great expenditure of money that there is little prospect of its being soon attempted; the station will therefore continue to be the grave of European military, whether French or English, for a period beyond calculation. The air of Pointe a Pitre is, as now observed, destructive of the health of Europeans to an extraordinary extent; it is not unfavourable to the African. The privates of the black corps have been more healthy in general at Pointe a Pitre than at most other places in the command; the white officers have suffered extremely. They live in anxiety and dread; and they do so with reason, for their quarters are

more exposed to the pestiferous winds which issue from the swampy vallies than almost any other part of the town.

The form of fever which prevails at Pointe a Pitre is radically periodic; but the paroxysms crowd so much upon one another, on many occasions, that it is difficult to separate them so as to trace the type with accuracy. The disease is fatal, not unfrequently within the seventh day,—sometimes on the third. When the termination is thus rapid, convulsion, coma, or other symptom, which denotes an excess of local action on the brain, are usually present. The fever of Pointe a Pitre has a great tendency to relapse after a certain progress in recovery; it is even observed that what may be called the material of the cause, adheres to the constitution for a long time after the subject is removed from the original source. Where the disease is of long continuance, one or other of the viscera within the abdominal parietes manifests diseased action and changed structure, which after long valetudinary health, leads the patient to his grave through diarrhea, dysentery or dropsy. Pointe a Pitre has been destructive to the lives of British soldiers at all times, where the post was occupied by Europeans; there is reason to believe that the greater part of the loss might have been prevented by a mode of medical treatment different to that which was ordinarily pursued.

The form of the endemic is similar in Guadalupe to what it is in the islands which lie in the

same chain ; it is varied in degree according to locality, season of year, and constitution of subject. The form, more strictly febrile, is radically periodic; the paroxysms are however, as already observed, sometimes so crowded upon one another that the type cannot be distinctly traced. The periodic, intermittent, or remittent predominates upon the whole; the dysenteric is next in frequency; the ulcerative or sore leg is common, especially in the drier and healthier months of the year; the pneumonic and rheumatic occur occasionally—not rarely.—The return, in Table, No. I., at least the three last years of it, show the relative salubrity of Guadaloupe with other islands in the same chain: the two first, viz. 1810 and 1811, exhibit an aggravated degree of sickness, the causes of which were artificial, consequently not referred to as grounds on which to estimate the salubrity or insalubrity of climate.

## CASE I.

Vaultier, *January 25th, 1813.*—Hess, Royal Artillery, aged twenty-two years, of spare habit and dissipated morals, seized with rigor in the afternoon of yesterday. To-day,—head-ache, thirst, sickness at stomach, bilious vomiting, pain in the small of the back, and particularly in the knees; the pulse frequent and quick; the tongue white; the skin warm and dry; the body costive. Bled to the amount of thirty-two ounces: tepid bath: James' powder gr. vi. calomel gr. xx. in bolus: in an hour afterwards, solution of salts at intervals; head shaved and covered with wet cloths. Evening,—two stools, preceded by vomiting of bilious matter: calomel and James' powder repea-

ted: purging injection. *26th*,—three bilious evacuations by stool during the night; head much relieved; the pulse still frequent; the tongue foul; the thirst considerable; the skin warm and moist: bilious vomiting recurred about ten in the morning;—it ceased, and again recurred in the afternoon. Several scanty evacuations during the day; the pulse 108 and soft; the tongue white; the skin warm and moist; the thirst continues. Calomel and James' powder continued: tepid bath: calomel, colocynth and jalap. Evening,—calomel and James' powder: clyster. *27th*,—three stools in the night—scanty and scalding; pulse 110 and soft; tongue white; skin warm and moist; thirst abated: diaphoretic mixture during the day: calomel and James' powder in the evening. *28th*,—two copious evacuations in the night;—one in the morning; pulse frequent—feeble; tongue foul; skin warm and moist; sensations of weakness; return of bilious vomiting in the morning. Calomel and James' powder repeated: countenance anxious: cold affusion: copious perspiration,—symptoms alleviated; two copious evacuations; no vomiting since two o'clock; skin moist; perspiration copious; pulse 110—not strong. Calomel and James' powder: effervescing draughts occasionally: blister between the shoulders: clyster: one gill of gin: clyster repeated. *29th*,—several stools during the night; sensations of heat diminished; pulse 94 and full; tongue clean at the edges; gums red and spongy; skin warm and moist; several stools; pulse 96,—rather full. Purging pills: bark with Madeira wine: one gill of gin-toddy. *30th*,—three evacuations by stool in the night,—one this morning; pulse 92 and soft: bark and Madeira wine: gin-toddy in the evening. *31st*,—two evacuations by stool in the night; pulse 84; skin natural in heat and moisture; tongue clean: bark, wine and gin-toddy. *February 1st*,—no stool: purging powder. *2nd*,—body open: no complaint. *5th*,—convalescent.

## CASE II.

Beau Soleil, November 17th, 1813.—Craddock, twenty-fifth regiment of foot, aged thirty-eight, habit full, attacked at three

o'clock in the morning, and admitted into hospital at seven. Giddiness and vertigo came on suddenly, without previous sensation of cold; the head now aches severely; the skin is hot and dry; the pulse 88,—full and strong; the body regular. Bled to the amount of forty-two ounces: purging pills and tepid bath. He became faint after the arm was bound up, perspired and slept; the head-ache not felt. The tongue is brownish and moist; the skin soft and moderately hot; the pulse 80; four motions. 19<sup>th</sup>,—body open; no fever. 22<sup>nd</sup>,—discharged.

### CASE III.

Pointe a Pitre, *September 30th, 1813*.—Lieutenant Phelan, First West-India Regiment, aged twenty-eight, full habit, sanguine temperament, indisposed for two days, was this day attacked with severe pain of the head, loins and limbs, nausea and vomiting; the pulse 125 in the minute—hard; skin hot and dry; eye heavy and red; face flushed; tongue foul; body costive; jactation unceasing. Bled to the amount of forty ounces: pulse 95—soft and regular; perspiration copious; skin warm and soft; pains alleviated. Evening,—the bowels have been opened by jalap and calomel: warm bath. *October 1st*,—slept well; no fever; body open: bark—two drachms every other hour. Four o'clock, P. M.,—accession of fever—less violent than the first. Seven o'clock in the evening,—twenty ounces of blood abstracted; warm bath; cathartic repeated. 2<sup>nd</sup>,—skin hot; no stool: elyster; warm bath, cathartic repeated. 3<sup>rd</sup>,—copious evacuation by stool; no fever: bark continued. 4<sup>th</sup>,—bark continued. 5<sup>th</sup>,—bark continued. Evening, (six o'clock)—accession of fever: fourteen ounces of blood abstracted from the arm; cathartic repeated. 6<sup>th</sup>,—the fever went off after the bleeding; the pulse 90; the skin moist; the body open: bark continued. 7<sup>th</sup>,—bark continued. 8<sup>th</sup>,—fever returned in the evening: sixteen ounces of blood abstracted. 9<sup>th</sup>,—copious perspiration during the night and even now; pulse 95—full and soft; body costive; cathartic. Four

o'clock, P. M.,—copious evacuation by stool: bark continued.  
14th,—perfectly recovered.

## CASE IV.

Pointe a Pitre, *June 28th, 1814.*—George Wright, an inhabitant of Grandeterre, had been ill of fever for four or five days under the care of a French practitioner. He had taken an emetic at the commencement of the illness, and afterwards a cathartic. The cathartic was rejected; vomiting continued with little intermission until to-day at two in the afternoon, when he was visited by Dr. Kean, surgeon of the First West-India Regiment, then stationed at Pointe a Pitre. Mr. Wright was thirty-two years of age, and of a spare habit. The pulse was 120 in the minute—small and hard; the skin was hot and dry; anxiety and oppression at the praecordia were great; vomiting incessant; restlessness extreme; a sense of languor and inability overpowering. With this, there was pain of the head, constipation of the bowels, diminution of urinary secretion, delirium—but not violent. Bled to the amount of sixteen ounces. Four, P. M.,—considerable relief; pulse 110—more expanded; uneasiness at the praecordia diminished; vomiting less urgent; head-ache less severe: clyster; tepid bath; extract—colocynth gr. xii. calomel gr. x. Seven, P. M.,—two stools; no vomiting; nausea with pain of the head still present, but moderate; pulse 116—strong; heat of the skin and other symptoms of fever have recurred with delirium. Bled to the amount of twenty-four ounces; clyster; tepid bath; blister between the shoulders. 29th,—little sleep; no delirium; headache gone; pulse 100—soft; skin moist and warm; two stools; sense of nausea and uneasiness at stomach: blister to the stomach. Evening,—nausea and sense of uneasiness at stomach removed; body open. 30th,—no return of fever; sleep sound; some desire for food; body open; pulse 98—soft and free. He recovered apace, notwithstanding the prediction of the French physician, who had said that the loss of one ounce of blood would be the inevitable cause of death.

*Island of Dominica.*

The island of Dominica, thirty miles in length and twenty in breadth, mountainous and rugged throughout, lies in latitude  $15\frac{1}{2}$  deg. north. The mountains of Dominica, the highest in the Charibean chain of islands, clustered into a mass of indescribable form, stretch from east to west. The sides are rugged and precipitous ; the surface intersected by numerous bold and deep ravines, in which rivers or rivulets rush down with impetuosity in the season of the greater rains. Rain falls in torrents in Dominica ; thunder is often tremendous ; hurricanes not unfrequent ; strong and comparatively cold winds descend from the mountains in gusts almost daily. The air is hot, and often oppressive by its heat at the sea coast, and near the mouths of the broader vallies ; it is cool and refreshing in the interior, the thermometer not higher, at various of the inhabited places, than  $74$  of Fahrenheit's scale at any time of the day.

There are properly only two military stations in Dominica, viz. Morne Bruce near the eastern, and the Cabritts near the western extremity of the island. Morne Bruce has the appearance of a truncated cone that has been, as it were, projected from the mountain on the east, to which it is attached by an isthmus or narrow neck of land of six hundred feet in length. The height of the Morne, above the level of the sea, does not appear to

exceed five hundred feet ; the table, or crown of it irregularly circular and nearly level, is about six hundred paces in diameter. The temperature of the air on the height is generally moderate. The winds, as rushing with violence through the mountain ravines, are sometimes disagreeable by their force, and not always innoxious in their effects to those who are carelessly exposed to them. The great barrack is placed at the north margin of the Morne ; as such, it is exposed to violent gusts of wind which descend through the valley in which Roseau River flows. The hospital stands on the west side of the Morne, at the very margin of the bank. It is a double building with galleries on each side, an apartment for a medical officer at the end of one of the galleries, and an apartment for a surgery, &c. at the other. The house bears the marks of having been planned by a person who had some knowledge of what belongs to the accommodation of sick. It does not appear to have been completed according to the original design ; even some parts of what had been finished had been suffered to go into decay before the year 1812, when this survey was made. The aqueduct, constructed for the conveyance of water from the mountain on the east for the purposes of the hospital, was neglected and dry ; the baths, and their necessary appendages were demolished and unserviceable. It was suggested, by the writer, that the hospital and its appendages should be finished according to the original design. The suggestion was not attended

to at the time ; and a hurricane, which occurred in July 1813, swept away every vestige of the building except the mason-work. A house, for the reception of sick, was erected on the site of the old hospital : it is a shed of mason-work—without galleries, deficient in the conveniences that are necessary to comfort, even of some that are essential to the effective execution of medical duty.

Morne Bruce overlooks the town of Roseau, the chief town in the island. The site of Roseau is near the embouchure of the river, and partly on its ancient bed ; it is consequently alluvial, viz. sand and gravel, abounding with exhalable moisture though not the moisture of the open swamp. Roseau appears, by authentic reports, to have suffered considerably from endemic and epidemic sicknesses on various occasions. The Morne, which hangs over it on the east, may be considered upon the whole as a healthy station in so far as respects itself ; but, as the troops which are stationed upon it have frequent intercourse with the town, whether on duty or otherwise, they are exposed to the influence of causes which belong to the site of the town, as well as exposed to vicissitude of temperature from difference in the elevation of the localities to which their duties or their pleasures call them. Thus prepared to be acted on, and thus exposed to the action of noxious causes, the soldier suffers considerably from sickness, often from sickness in dysenteric form, not unfrequently from intermittent or remittent, and occasionally

from continued fever of the higher degree of intensity.

Prince Rupert's Bay is considered as an important station in time of war ; consequently the means which assure the command of it, as they are supposed to be those which assure the sovereignty of the island, have always strongly engaged the attention of the British government. The bay is open and extensive, bounded on the south-east by a promontory called Point Round ; on the south-west by two mounds of a singular form known by the name of Cabritts. The promontory—Point Round, is rocky, dry and barren in soil : bold at the sea margin, it rises interiorly by a rapid ascent, so as to be soon lost in the central ridge of mountain which constitutes the body of the island. The shore, which sweeps in a semicircle from Point Round westward, is shingle, sand, or foul swamp. The plain, which intervenes between the sea beach and the base of the mountain, appears to be about two miles in depth ; it is cultivated partially and imperfectly. A considerable, but mean town near the western extremity, has obtained the name of Portsmouth. From Portsmouth westward, the soil is marshy, cleared of wood, of a forlorn and dreary aspect. As it tends westward it advances into the sea so as to form a projection which divides the great bay into two, viz. Douglas Bay on the north, and Prince Rupert's Bay on the south. A mound, or ridge of rock, about five hundred feet in height, extending from one bay to the other, terminates this

swampy plain, covered, on the exterior or west, by another eminence of greater elevation, a gorge, or funnel-like depression intervening between them, the base of which is at least two hundred feet above the level of the sea. These mounds, known by the name of inner and outer Cabritts, seem as if they had been dropt from the clouds ; they form a barrier between the sea and the western extremity of the swamp. The inner, as viewed at a distance, has a resemblance to a long and deep roofed house resting on a level plain ; the outer, which is a heavy mass of rock of seven hundred feet in height, resembles the head of a vast hammer,—abrupt or perpendicular towards the west, inclined gradually towards the east or inner mound, from which it is separated by a gorge-like valley.

The ordinary course of the intertropical breeze ranges between north-east and south-east. The Cabritts bound the plain of Portsmouth on the west ; consequently the winds which sweep the plain, and which blow immediately over the swamp which occupies its western extremity, strike directly upon the inner Cabritt. As the breeze may happen to incline to north or south, the current enters at the north or south extremity of the gorge, blows with force in the gorge itself, and plays in eddies on the lee-side of the inner Cabritt. The noxious exhalations of the swamp, absorbed and mixed with the atmosphere, encircle the inner Cabritt ; they are prevented by the form of the ground, (by which currents of wind are directed,) from ascending to

the outer. The air of the outer is therefore pure, cool and refreshing near the summit, even comparatively light and pleasant at a short distance exterior of the gorge. The air of the inner, as directly under the lee of the swamp, is deleterious —subversive of the health of Europeans in an extraordinary degree. The lee-side of it may be said to be untenable; its southern extremity at the barrier, when the barrier was the station of a night sentinel, rarely failed to send the sentinel to the hospital.

As the island of Dominica is supposed to be a possession of value to the British nation in time of war; and, as the Cabritts at Prince Rupert's Bay are supposed to be the strong hold of the island, considerable sums of money have been expended in constructing works of defence, and many lives have been lost in guarding the works that have been there constructed. If it be admitted, and the fact is indisputable, that the swamp which lies windward of the inner Cabritt, contains the material cause of the sickness which prevails at this station, it may be concluded, from a general view of positions and bearings, that the exhalations which arise from that swamp, as incorporated with, or suspended in the atmosphere, are so conducted by the nature of the ground as to strike upon the quarters of the troops with different degrees of force. The barrack, which looks into Douglas Bay, is placed at the northern extremity of the gorge, more inclined to the inner than the outward Cabritt. It is thus ex-

posed, by position, to currents of air which pass over the swamp, particularly when the breeze inclines to the south-east: it is, as might be expected, an unhealthy quarter. The barrack, which looks into Prince Rupert's Bay, stands at the southern side of the gorge, somewhat advanced on the skirt of the outer Cabritt. It is thus only partially exposed to the current of air which enters the gorge at that extremity; and it is decidedly, as appears by the sick returns, a less unhealthy station than the other. Another of the principal barracks occupies the summit of the inner Cabritt. The position is exposed; the barrack is unhealthy, so unhealthy in fact that it might be safely computed, that two thirds of any given number of European soldiers stationed on this height, would be dead or unserviceable within the year. Some houses were erected by individuals on the lee-side of the inner Cabritt, near the channel or gorge between the heights. They were good houses in themselves: but were found to be uninhabitable from the unhealthy situation; they are now untenanted.

If positions be viewed, and an estimate made of the power of the causes which direct the play of the currents of air on the varied face of a country, it is at once obvious that the noxious air of the swamp, which enters the gorge and plays in eddies on the lee-side of the inner Cabritt, cannot well be carried to the summit of the outer. Such opinion may be formed from the mere information of the eye; it is corroborated by sensation, in walking over the

ground, and by experience of fact as seen in the hospital registers. The cause of the disease does not appear to extend far west of the channel of the gorge itself. A detachment of Royal Artillery, stationed at Prince Rupert's Bay, occupied a small barrack on the skirt of the outer Cabritt at a short distance from the channel of the gorge. The atmosphere at this quarter was not oppressive to the sensations of a stranger ; and, notwithstanding that the inmates of the barrack were obliged, in the course of their duties, to enter the noxious circle of the inner Cabritt, their health suffered little in comparison with the health of others.

The summit of the outer Cabritt is, as already observed, of a cool temperature, the air pleasant and refreshing. The winds are often boisterous ; but not apparently injurious to health. The aspect of the countenance of those, who are stationed on the summit, speaks decidedly in favour of the salubrity of the outer Cabritt ; the expressions of satisfaction, which escape from the sick, at the time they are conveyed from the barrack at the gorge to the hospital on the height, indicate it most strikingly.

The eye, in looking down from the outer Cabritt, is enabled to trace the channels in which the air which passes over the swamp necessarily moves after it enters among the stations of the troops. The sensations of an individual, as he traverses the different positions where barracks are placed, tend to confirm the opinion which he may have formed

by the information of the eye. The movements of life are languid, respiration difficult and oppressed, the pulse irregular and disturbed, the feelings upon the whole uncomfortable while he is on the summit of the inner Cabritt, the lee-side of the Cabritt, or the intermediate gorge. The oppression vanishes, the lungs dilate, and the cheerfulness of life returns, soon after he leaves the gorge or valley to ascend to the outer Cabritt; before he reaches its summit, his sensations are totally changed.

It would be presumptuous in a physician to take upon himself to direct an engineer or military officer in what manner he can best fortify a military post; it is not presumption, on the contrary it is the direct duty of a physician to point out such positions in an unhealthy country, as may be best occupied for defence with the least risk of injury to the health of those who defend. It is generally admitted that batteries *à fleur d' eau* are the most effective batteries against those who attempt to land in boats at a given point of the coast; but while this is admitted on one part, is is obvious on the other that batteries of this description are not advantageous, unless they be protected by close works called martello towers. A combination of means is therefore necessary; and it is important that it be scientificaly adjusted. Batteries *à fleur d' eau*, on the beach at Prince Rupert's and Douglas Bay, protected by martello towers, so as not to be taken or held by an enemy, afford means of efficient military defence against the landing of an enemy. The

position of the towers, which are considered as the barracks of the troops who man and defend the batteries, is comparatively little exposed to the impulse of the causes of disease which float in the atmosphere of the vicinity. The cause of the sickness obviously proceeds from the lagoon, or swampy plain which lies windward of the inner Cabritt; and as all the posts, at which troops are stationed, are more elevated than the level of the plain, the troops are thus exposed to currents of exhalation which, according to the law of its nature, ascends as it proceeds from its source—augmented in force of impulse at the elevated station by the conditions of the locality. The batteries, and the martello towers under the protection of which the batteries are placed, are erected upon the beach, nearly on the same level with the plain or swamp, distant at least a quarter of a mile. They may thus, according to the law which regulates the ascent and movement of vapour, be supposed to be placed beyond the range of the ordinary current of swamp exhalation; for they will be placed by the military engineer, without any regard to salubrity, westward of the gorge, as giving the best command of the bays.

The measure now suggested, viz. batteries *à fleur d' eau* with protecting martello towers, is a reasonable mode of defence on the ground stated; it is only a part of what is necessary for the security of the Cabritt, and presumptively for assuring the sovereignty of Dominica. The summit of the outer Cabritt, though exposed to storms and gusts of

wind, has upon the whole a cool and refreshing atmosphere. Perfectly exempted, by position, from the impulse of exhalation from the swampy plain, it is a comparatively healthy station for troops. The height of the outer Cabritt is stated to be seven hundred feet above the level of the sea. The western face of it is perpendicular; the southern and northern are abrupt and precipitous, scarcely practicable; the eastern is steep, but practicable throughout. The table, or summit of the height is of considerable extent from north to south, declivous from the western margin to the inner Cabritt, on the east. The soil of this mass of mountain is not a good vegetative soil; it is notwithstanding capable of supporting the more common plants and roots which are employed for the food of man. The position, strong in itself, is such as may be rendered almost impregnable by art. It may therefore, as rendered productive of ground provisions, be maintained by a suitable garrison for a longer time than a siege can be supposed to continue; for besiegers must here, besides the difficulties of a strong position, encounter the attacks of a destructive disease, inasmuch as they must occupy the places in which the cause of the disease arises, or to which it is carried in a state of concentration.

If the manner of fortifying the outer Cabritt now suggested be deemed eligible, as holding out the best chance of securing the sovereignty of the island, the form to be given to the barracks or habitation of the troops, both in the view of resisting the vi-

lence of hurricane, and of not exposing the health of the inhabitant to injury, is a point of material importance, such as deserves the attentive consideration of those who look beyond the mere exigence of the day. It is evident enough to every man's common sense that barrack accommodation, in order to embrace this double purpose, ought to be placed upon a floor of terrace, brick or pan-tile, with proper exterior drains; that it ought to be wide and of one story only, surrounded on all sides by a gallery closely and securely jalousied; that the roof ought only to be of moderate elevation, closed at the eaves, and of a rounded or ship keel form that gives little hold to the wind. If the building be of stone or brick, the roof may be protected by a parapet wall of suitable height; or if it be of wood, an upright at each end fixed deep in the ground, joined by a beam as ridge pole firmly rivetted, might be considered as a safe dwelling from the effect of hurricane, particularly as bound down by a cable passed over the roof at each end, and fixed by a bolt to a rock in the earth.

The disease, which principally prevails among the troops stationed at Prince Rupert's Bay, presents itself under the form which is more strictly called fever, viz. intermittent or remittent, sometimes regular and mild, sometimes anomalous and malignant. The type is certain—single or double. In the latter months of the year, after the heavy rains have ceased and the north winds set in, it is often violent; and, if not treated in a bold and decided

manner at the commencement, it is often fatal. Where the paroxysms and remissions are regular, the perspiration which accompanies the solution of the paroxysm copious and fluid, the danger is inconsiderable. Where the paroxysms are anomalous, variable in the hour of accession and manner of proceeding, danger is reasonably suspected; it often comes suddenly. Where the paroxysms subside rather than terminate by sweat or other copious evacuation, congestions and changes in structure take place in one or other of the important internal organs: the ultimate issue is premature death, the progress to it more or less rapid according to the importance of the function of the organ that is principally affected. The intermittent fevers which are contracted at the military posts in the vicinity of Prince Rupert's Bay, adhere long to the habit: they relapse at frequent intervals, and for a length of time after the subject has been removed to a distant place. This relapse, which occurs after a change of station, is often distinguished by long continued coldness, by tremors and spasms, sometimes by perspirations of unusual coldness and long duration, at one time profuse and fluid, at another scanty and clammy.

The intermittent fever, as it appears at the stations near the inner Cabritt, is often fatal in the latter months of the year, where it is left to its own course, or feebly opposed by art. It is not untractable to decided treatment, viz, abstraction of blood, emetics, purgatives, diaphoretics, blisters, and ba-

thing—warm and cold. By these means, applied early and to proper extent in quantity, the disease is rendered simple and regular ; and, when simple and regular, it is easily arrested by Peruvian bark, solution of arsenic, or cob-web. Besides the periodic, the dysenteric form of fever occurs occasionally as primary, it is common as secondary ; the pneumonic is comparatively rare, except in the drier months ; the ulcerative, or sore leg is then frequent, especially among those who are stationed on the outer Cabritt

A febrile disease, of the dysenteric form, appeared epidemically in the month of June, 1813, among the troops who were stationed on Morne Bruce. It was not fatal in any instance until after a hurricane which occurred in July. From that time, its ravages were great, owing principally, it is presumed, to want of means to accommodate and treat the sick in a proper manner. Besides dysentery, there were many instances, during this period of misery, of concentrated continued fever ; especially among the officers who were quartered about Roseau, whether newly arrived, long resident, or native of the tropical climate. The senior medical officer, a person of the latter description, sustained a severe attack of it, the account of which, as written by himself, is here subjoined.

#### CASE I.

Roseau, December 3rd, 1813.—R. H., between thirty and forty years of age, of a spare habit and temperate in manner

of living, was attacked suddenly with violent pain of the head, flushing of the face, burning heat and dryness of the skin, restlessness, anxiety and prostrated strength; the pulse 120—full and hard. Mr. H. conceiving that the disease, from the manner in which it came on, threatened to be a severe one, desired, as there was no medical person near, that his arm should be bound up in order that he might open his own vein. He in fact did so, and abstracted four pounds of blood by a large orifice, when, becoming faint, the arm was bound up. When he recovered from fainting, the head-ache and other of the distressing symptoms were relieved: they recurred in a short time. He resolved to re-open the vein; but the bandage slipt while he was in the act of removing to another room. The blood flowed rapidly. It was allowed to flow until faintness supervened. When he recovered from fainting, he felt like a new man—relieved completely from the weight under which he had been in a manner compressed. He continued free from pain or uneasiness until the evening, when the febrile heat returned with a full, but rather soft pulse. He went into the warm bath, continued in it twenty-five minutes; and, on coming out of it, was submitted to cold affusion, viz. two buckets full of the coldest water that could be procured. He was wiped dry, laid in bed and covered with a blanket. He soon fell into a sound sleep with general moisture on the skin. When he awoke, at five in the morning, he felt no complaint. Jalap with calomel was given as a purgative; there was no return of indisposition.

## CASE II.

Prince Rupert's Bay, *June 10th, 1812.*—Campsey, aged twenty-four, plethoric habit, was attacked with symptoms of fever on the evening of that day, and admitted into hospital on the 11th. He then complained of great pain of the head; the skin was hot and dry; the pulse quick and hard; the tongue much loaded. Bled to the amount of thirty-six ounces; calomel, one drachm, with six grains of Dover's powder. *12th,*—

perspiration profuse in the night; no evacuation by stool: purgative injection: twenty grains of calomel, with six of Dover's powder. 13th,—copious stools during the night: ten grains of calomel, with two of emetic tartar. 14th,—the mouth affected by mercury: purging salts. 15th,—no fever; the gums sore: castor oil: two ounces of decoction of bark, every second hour, until the 29th, when he was discharged to duty.

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### *Island of Martinico.*

The island of Martinico, about sixty miles in length and thirty in breadth, lies in latitude 14 deg. and 15 min. north. It is generally mountainous, the surface intersected by numerous ravines, and watered by numerous small rivers and rivulets. The soil is generally an open and permeable soil, the inclination of the ground ordinarily such that water flows rapidly over it. Near the shores in some places, and near the embouchure of the larger rivers in most, the surface is flat and foul, water moving slowly, sometimes almost stagnating. The temperature of Martinico varies at different places; the interior is agreeably cool; the margin of the bays, and the flat grounds near the shore are often oppressively hot; the atmosphere, as loaded with noxious exhalation, peculiarly offensive to the European constitution: the district near the Lamentine River, windward of Fort Royal, furnishes a strong example of it.

St. Pierre, a town near the western extremity of the island of Martinico, is the finest town in the whole chain of Charibean islands. It occupies the margin of an open bay, at the embouchure of a broad and deep ravine, through which a mountain stream descends on a rocky bed from the interior to the sea. The country, in the rear of St. Pierre, is beautifully picturesque in its natural state: it was cultivated with taste, and in a style of great magnificence prior to the revolution of 1789, and even now it has the appearance of grandeur. The town is of considerable extent, the houses generally large and commodious, the streets in regular line, and paved with stone. Water, brought from the mountain in a canal, is conducted to most parts of the town in small channels. The water is pure in itself; it flows on a declivity, flows with rapidity, and thereby contributes to cleanliness and perhaps to healthiness. The actual site of the town is narrow, not exceeding six hundred paces in depth; the bank in its rear, three hundred feet or more in height, is steep—practicable with difficulty. St. Pierre, thus placed on the lee side of a mountainous island, and partly under the lee of a high bank, cannot be expected to have other than a precarious ventilation, viz. violent gusts of winds, or dead calm. The strong winds, which rush down the ravine in a direct current, wind in eddies on the lee of the bank, necessarily in the streets of the town. They strike with unequal force according to the circumstances of locality; hence the tempe-

rature, in so far as temperature is affected by wind in a tropical climate, is irregular.

The houses, occupied as quarters for troops in the year 1812, were partly on the right, partly on the left side of the river. They were near the gorge, where the valley expands to form the beach upon which the principal part of the town is built. So situated, they were exposed to considerable vicissitude of temperature from varying currents of wind ; and, so exposed by position, they were little protected, by form of construction, from the full impulse of the force of the wind. No open swamp, and very little foul ground exists at, or near St. Pierre. The site is however partly alluvial ; vicissitudes in temperature are sudden and considerable ; rains are frequent and heavy ; the atmosphere of such parts of the town, as are near the thickly wooded and steep bank, is surcharged with moisture. Intermittent and remittent fevers occur frequently ; the concentrated continued occasionally ; the dysenteric is the most common ; it is frequently complicated in form,—fatal to great extent, both in late and former times.

Fort Royal, the capital of the island of Martinico, is situated at the western angle of a capacious bay, on a small swampy plain of *deltoid* form, near the mouth of a small stream and shallow ravine in which the stream flows. The site of the town is alluvial, literally bog in its natural state. It appears to have been chosen, like others in the West-Indies, for the sake of the harbour without any

regard to salubrity. The locality, insalubrious in itself, has been changed; the condition ameliorated by the labours of a scientific people. The quantity of noxious exhalation is now diminished, or so diluted by artificial means that diseases of the more aggravated types are rare. The streets are paved, the houses erected on brick paved floors, drains are numerous,—almost every thing has in fact been done that could be conveniently done to diminish the influence of the causes of disease. Intermittent and remittent fevers, with a predominance of gastric symptoms, are notwithstanding common; the dysenteric principally prevails, sometimes simple and of a protracted course, sometimes complicated and soon fatal.

Fort Louis occupies a peninsular eminence of rock, dropt, as it were, into the sea at the eastern angle of the deltoid plain upon which the town of Fort Royal stands. The height of the rock at the western face, which is the highest, appears, as measured by the eye, to be between fifty and sixty feet above the level of the sea. The margin of the rock is covered with batteries, barracks and other buildings subservient to the purposes of the garrison; the table, or interior summit furnishes a level space for parade. Fort Louis has been at all times an unhealthy station for troops. There does not appear, at first sight, to be any thing upon the rock itself to which this can be imputed; it has therefore been supposed that the material of the sickness, produced by the Lamentine swamps, was

conveyed to the fort by the current of the winds, which, during the day, usually blow from that quarter. Whether this be the case or not, the fact will not be disputed by those who have been on the spot, that the winds which blow from the Lamentine district are more disagreeable by impression to the healthy individual, than winds of equal force which blow from the south or west, or than the much stronger winds which strike upon Pigeon Island, which lies on the opposite side of the bay, without range of the current which passes over the Lamentine district. It is reasonable to believe that this noxious district, which is windward of the fort, furnishes what may be called the material cause of the sickness ; it is at the same time proper to observe that the rock itself exudes a great deal of moisture at all times, more at certain times than at others :—the sickness is greatest where the exudation is most abundant.

Fort Bourbon is erected on a height on the north, which overlooks the town and Fort Louis at the distance of near one mile in a direct line. The elevation of Fort Bourbon appears, as judged by the eye, to be about six hundred feet above the level of the sea ; as such, the position is comparatively cool. The site of Fort Bourbon is dry in itself ; but the wall of the fort, in dismantling the works, which was done after the capture in the year 1810, having been thrown into the ditch, the ditch is choaked in some places ; in the season of the heavy rains, it is converted into what may be

termed a swamp, the exhalations from which cannot be supposed to be altogether harmless. The fort is erected at the southern extremity of a ridge of high ground extended in a northerly direction into the interior, the summit of which, for some distance interior of the fort, is covered with buildings, mostly in shed form, appropriated to different purposes, viz. quarters for officers, hospitals for sick, stores, &c. A range of huts on the west side of the ridge, two or three hundred paces below the summit, is the present quarter of the thirteenth regiment of foot.

The military quarters at the different posts near Fort Royal are not of a good kind. There is one large barrack in Fort Bourbon of two stories ; the other quarters are shed-form barracks without gallery, at least without jealousy to the gallery. The bomb-proofs were ordered, soon after the fort surrendered in 1810, to be fitted up as quarters for the reception of troops. It appeared, on reconsideration of the case, that the inmate must be constantly exposed to a thorough draught of air, or that he must be without ventilation ; the design of putting troops into them as a quarter was therefore abandoned. The huts on Bouillé-height, occupied by the thirteenth regiment of foot as quarters, were flimsy in structure, such as often required repair. The repairs were made by the men themselves as an amusement, not as a fatigue ; and from this, or other cause less obvious, a strong attachment arose in this corps to the hut-form of dwelling, so strong

that an exchange to the best barrack in the command would have been submitted to with regret.

It is not easy to form a correct estimate of the actual salubrity of the positions on Bouillé-height, inasmuch as the troops which occupy Fort Bourbon, and which are cantoned on the huts on the ridge, do duty in rotation at Fort Louis, which is noted as a sickly quarter. The form of the fever most common among the troops, whose head quarter is on the height, is strictly periodic ; sometimes intermittent, sometimes remittent; sometimes mild and regular ; sometimes violent and anomalous. It is suddenly fatal in some cases, viz. where the principal force of its action is manifested on the cranial cavity ; it is tedious and protracted in others, viz. where the chief force of its action is manifested among the organs which are contained within the abdominal parietes. But though fever, commonly so called, is not rare among persons who inhabit Bouillé-height, and do duty in the town and fort ; the dysenteric form is upon the whole the most prevailing,—sometimes simple, sometimes complicated. It is easily checked where it is simple : it is prone to return, and it is not unfrequently fatal in consequence of repeated returns.

The small town of La Trinité on the north side of the island was occupied by a detachment of British troops in the year 1812. As there appears to be something peculiar in the air of La Trinité, in so far as respects the form of the prevailing endemic, it would not be proper that it were passed

over without notice in this place. The town stands upon a beach of white and pure sand, at the centre of an open bay, the ground in the rear high and irregularly broken. A rocky eminence of an oblong peninsular form, similar in appearance and composition to the rock in Fort Royal Bay, on which military works are erected, projects into the bay at the north-west quarter. The rock appears to be between forty and fifty feet in height, the summit in tabular form ; a battery, a small barrack and guard house are erected upon it. The troops who happen to be stationed on this projection, even those who sleep upon it, or perform the duty of sentinel during the night, rarely escape without sustaining an attack of fever at certain seasons of the year : the type is usually intermittent, the symptoms of extraordinary violence. Nothing offensive is observed on the summit of the rock, the air is notwithstanding unpleasant by its impressions, in a similar manner as the air of Fort Louis : damp or moisture exudes from its exposed surfaces in a similar manner,—at certain times more than at others. The disease, which occurs to those who sleep at this post in certain months of the year, is generally of an aggravated kind ; and, as this would not be expected from a view of the exterior, it has been supposed that here, as well as at Fort Louis, the material which causes the disease is conveyed by the current of the breezes from a lagoon which lies in a south-east direction, across the bay, at the distance of one mile and a half. Fevers are not com-

mon among the inhabitants of the town who live near the level of the beach ; dysentery is altogether unknown : it even, when imported, rarely maintains itself for any length of time, unless where material changes in the structure of the coats of the alimentary canal and mesenteric system have already taken place.—The anti-dysenteric property in the air of La Trinité is singular ;—the effect could not be anticipated from a view of the locality.

The island of Martinico, like other islands in the West-Indies, varies at different places in its scale of salubrity. There are stations in it, where the health of the European suffers little, even after a long residence ; there are others where health is soon destroyed, the term of life materially abridged by the effect of diseases produced by climate and locality. The dysenteric appears to be, upon the whole, the more prevailing form of disease at the different stations which have been occupied by British troops since the year 1810, except at Fort Louis and La Trinité ; where, as already observed, the intermittent and remittent prevail,—violent, complicated and fatal in its issue, at certain seasons of the year.

The interior of Martinico is, upon the whole, favourable to the health of Europeans, considered as a tropical climate. The district called Gros Morne, on the road between Fort Royal and La Trinité, stands among the most favourable. The atmosphere is cool and refreshing ; the environ beautiful.

Besides the salubrious air of the interior and the peculiar anti-dysenteric property of the air of La Trinité, which may be, and which in fact has been applied with advantage to the recovery of the health of the invalid military, there is a gaseous hot fountain, about eight miles interior of Fort Royal, of singular efficacy in the cure of rheumatism, palsy and even those cachectic states of the system which follow ill cured intermittents or remittents. The benefit resulting from the waters of this fountain, when properly administered, is great according to the reports of those who have made experiment of it. What has fallen under my own observation is sufficient to convince me that it is considerable. Attention to regimen, to bathing and drinking of the waters, is indispensable to assure the full effect: but Englishmen reluctantly submit to rule; they will therefore be oftener disappointed than the more tractable French.

## CASE I.

St. Pierre, *August 7th, 1814.*—Spranger, third battalion of the sixtieth regiment, aged thirty-two, form athletic, habit full, unwell for some days past, was admitted into the hospital this evening, complaining of severe purging and griping, the stools frequent and slimy. Nausea was troublesome; the tongue was foul and blackish; the pulse frequent and full; the skin hot. Bled to the amount of twenty ounces,—the blood buffy: emetic: after the operation of the emetic was over, antimonial wine was given with tincture of opium: perspiration; comparative ease. *8th.*—antimonial powder with tincture of opium. Evening,—the symptoms recurred with violence: blood-letting repeated: calomel gr. vi., opium gr. i. *9th.*—

nausea urgent: calomel gr. iii., opium half a grain every fourth hour. 10th,—diaphoretic draught: warm bath. 12th,—castor oil: anodyne draught. 13th,—dysenteric symptoms urgent: diaphoretic draught: blister to the abdomen. Evening,—symptoms less urgent. 14th,—somewhat easier: the stools loose; rhubarb with Dover's powder. 15th,—chalk mixture, with tincture of opium. 16th,—died and was *opened*. Tubercles and small abscesses in the lungs; the liver adhered by a strong preternatural band to the diaphragm; the spleen was considerably enlarged; the omentum collected into a fleshy vascular mass at the arch of the colon; the intestines more red and vascular throughout than natural: the mesenteric glands were enlarged.

## CASE II.

Fort Bourbon, *October 11th, 1812*.—Henry, sixty-third regiment of foot, aged twenty-four years, attacked on the evening of this day with symptoms of severe fever.—he had felt unwell the day preceding. He was seized, in the evening, with cold and shivering, severe head-ache, sickness at stomach and vomiting, pain in the small of the back, &c. He staggers, as if he were drunk, when he attempts to walk; the eye is red; the face pale; the skin hot and dry; the pulse oppressed; the tongue white; the body open; the symptoms severe. Bled to the amount of thirty-two ounces: purging clyster: solution of salts: pediluvium. 12th,—vomited three different times in the course of the night; sweated copiously; the pulse frequent; the countenance unsatisfactory; three evacuations by stool; pain at stomach; nausea: fomentations and warm plaster to the epigastric region: effervescing draughts: pediluvium. 13th,—slept a little in the night; three stools; the pulse quick; the tongue white; pain at stomach increased; head-ache and pain of the back diminished; perspiration moderate: blister to the stomach: effervescing draught every third hour. Evening,—pain in making a full inspiration; vomits now and then; skin damp and clammy; pulse frequent: purging clyster. 14th.—

no sleep; vomiting continues; no perspiration; skin cool; tongue yellow—brown at the centre; pulse about ninety strokes in the minute; no evacuation from the bowels after the clyster: warm bath: three grains of antimonial powder, every third hour. Evening,—uneasiness at stomach; vomits now and then; antimonial powder omitted; bowels torpid: purging clyster. 15th,—the skin of the neck and face, particularly at the angles of the mouth, of a dusky yellow colour; vomiting continues; the pulse frequent; the febrile heat diminished; pains of the legs. Infusion of bark, with a portion of purging salts every hour: purging clyster; the legs fomented. Evening,—three stools in the course of the day; profuse bleeding from the nose, viz. to the extent of sixteen or twenty ounces; pulse frequent; heat of the skin diminished—not below natural; the aspect of the eye languid; wine nauseated; porter and spruce-beer relished. 16th,—bleeding at the nose recurred about eleven o'clock, and continued for an hour: frequent vomiting in the night:—the matter ejected mixed with blood; no complaint of local pain; nausea; the skin yellow; the hypochondria full and somewhat tense; stools frequent during the night; the pulse frequent—not weak; the tongue moist at the edges—a black streak in the middle; thirst urgent. Evening,—haemorrhage from the nose by drops; urine high coloured and scanty; pulse frequent—not weak: assafœtida by clyster:—no feculence voided; hickup troublesome at intervals; the skin hot, dry and yellow; the tongue brown; no evacuation by stool. Calomel gr. v.: assafœtida—clyster. Evening,—calomel gr. x.: clysters: no feculence. 18th,—hickup; no stool nor urine in the night; the tongue black and dry; eye red and dim; bleeding at the nose by drops: clysters with calomel and colocynth: friction with camphorated oil. Some sleep;—intermission of hickup for some hours whilst he slept. 19th,—two copious evacuations by stool; hickup continues; the stools black—with mixture of blood; the pulse frequent—not weak; the skin warm; the tongue black. 20th,—seven stools in the night—black: the liquid that has been drank rejected—mixed with something of a dark colour; the frequency of the pulse rather increased; the

tongue dry and black—like an overdone beef-steak; hickup continues. 21st,—hickup continues; five stools in the night—black in colour; the pulse strong—irregular or intermitting; the skin sore, as if from the effect of bruise,—rather moist, somewhat less yellow. 22nd,—several black evacuations by stool; the eye clearer; the countenance more animated; the pulse, which is frequent, intermits occasionally; hickup less distressing; tongue black and dry; urine of a green colour—small in quantity. 23rd,—Dozes, as if asleep; vomited once in the night; two evacuations by stool; less hickup; pulse more regular; smell from the body cadaverous; tongue black and dry; two black and bloody stools; sighs frequently, and seems as if he were uneasy. 24th,—three black and bloody stools during the night; skin cold and clammy; pulse feeble and intermitting; countenance death-like. He died about three o'clock, and was opened; but, the report of the dissection, being on a separate piece of paper, has been lost so that it cannot be given in this place.

### CASE III.

La Trinité, *August 4th, 1814.*—Corporal Edwards, of the sixty-third regiment of foot, was, at ten o'clock this morning, reported to be ill in his quarter. He was visited by the resident medical officer and sent to the hospital. The symptoms were then violent, viz. excessive pain of the head, a strong, hard and frequent pulse, a hot and dry skin, urgent thirst, &c. Blood was abstracted from the arm to the amount of two pounds: a blister was applied to the whole of the head: jalap with calomel was given as a purgative. Noon,—insensible; the eyes half shut; respiration convulsive; the body warm, even hot at the extremities,—covered with sweat; the pulsation of the artery at the wrist not perceptible. Æther, with camphorated mixture,—it was swallowed with difficulty: stimulating purging clyster: no effect. He died about one o'clock, and was opened some hours after.—No perceivable morbid appearance about the head; numerous adhesions of the lung of

the left side with the pleura and diaphragm; *introsusceptio* of the small intestines at four different places; the stomach contained a greenish ropy fluid;—there were patches of inflammation on its internal surface; the spleen was unusually large in size, but not apparently of changed structure. *Note*.—It is remarked of this case that Edwards was a man of a pale complexion and cachectic habit. He had complained, for three or four days of head-ache, thirst, &c.; but, having charge of the canteen of the detachment stationed at La Trinité, he did not report himself to the medical officer.

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### *Island of St. Lucia.*

The island of St. Lucia, thirty miles in length and twelve in breadth, lies in latitude 14 deg. north. The land is generally high; the interior of great elevation;—the mountains in cone oftener than in ridge form. The vallies between the mountains are various; some of them are considerable in extent. The soil appears, upon the whole, to be a rich soil, calculated to produce the sugar-cane with little labour comparatively; the scene is notwithstanding sombre, dreary and forbidding. The temperature is generally high in plains and vallies, sometimes oppressive, in a similar manner as in other plains and vallies within the tropics; it is moderate, even sometimes cold at the higher inhabited places. On Morne Fortuné, the principal military station on the island, the thermometer generally stands at seventy in the morning, sometimes under seventy; it rarely rises higher than eighty at any

time of the day. Winds are strong and often boisterous in the winter months ; hurricanes occur frequently in the hurricane season ;—oftener perhaps, and to greater extent than in most others : rains descend in torrents at certain seasons of the year in all parts, particularly on Morne Fortuné.

The island of St. Lucia is not of an inviting aspect as viewed at a distance. The idea of insalubrity which hangs upon the mind, and the apprehension of injury from venomous serpents, render it an irksome station to the military. The insalubrity of climate is a serious drawback in a just estimate of things ; it rarely appears to be put into the balance in the warlike game of Princes. St. Lucia is unhealthy ; it has notwithstanding been the cause of much bloodshed to France and England,—more perhaps than any other island in the Charibean seas. It possesses a capacious and safe harbour ; and, on that account, it is deemed important to those who seek to maintain superiority in the Windward and Leeward island station. The conquest of it has cost a good deal of blood to the English nation on different occasions ; the maintenance of the conquest, by an European garrison, costs a good deal annually through the ravages of disease. The island is thus expensive of military life ; and as soldiers are purchased with money, it is important, as a measure of mere financial economy, to endeavour to disarm the climate of its injurious tendencies by a scientific arrangement of conditions connected with the accommoda-

tion of troops. Pigeon Island, the banks of the Carenage, the town of Castrie, and Morne Fortuné are the principal stations which solicit attention.

Pigeon island, a small circular island near the north-west extremity of St. Lucia, is separated from the main by a channel nearly one mile in breadth. The island rises up in conical form, by a gradual but steep ascent, to the height of three hundred and forty feet: it is without water, without a tree, almost without a shrub,—bare and stony, and without serpents. The air is pure as sea air; the winds are strong, often violent. The barracks for the troops are in shed-form—without gallery, at least without jealousy to the gallery; consequently the inmate is exposed contingently to the impulses of furious wind, or to want of ventilation. The natives of Europe, who are sent to this island at their first arrival within the tropics, are reported to continue in good health for a length of time, perhaps in as good health as if they were in their native country; those, who are sent there as recovering from fevers contracted at other stations, are generally benefitted; those, who are recovering from dysentery, are said to be injured: if this be the fact, the cause of it is comprehensible.

The town of Castrie stands upon a plain at the bottom of a deep and narrow bay, which has the appearance of a grand canal. The site of the town, originally swamp and surrounded by swamp,

though improved by art, viz. draining and paving, still retains the marks of its original character, and still produces the forms of disease which belong to swampy countries. Fever of the intermittent and remittent type is common, and not unfrequently obstinate to common means of remedy. The concentrated endemic, which goes by the name of yellow fever, is comparatively rare. Paroxysm and remission are generally observable, even among Europeans who are recently imported; mortality is notwithstanding great, unless where the disease is met at an early period, and opposed with vigour. The military posts, Vigie and Ciceróne are on high ground on the side of the canal, or Carenage: they are less healthy than the town, which stands near the level of the sea and actually, as it may be said, in the swamp itself.

Morne Fortuné, the height which overlooks Castrie, rises to eight hundred feet and upwards above the level of the sea. It is considered as the strong hold of St. Lucia, and as such it is the principal station of the military who maintain the sovereignty of the island. The Morne is a mass of mountain of obtuse conical form,—steep, but not impracticable. Its summit, which is rounded and considerably expanded, furnishes space for a military work, quarters for troops and parade. The soil at the summit and shoulders is a stiff adhesive clay. The shoulders expand at the east and west; the surface is irregular; in some parts, protuberant; in others, flat, wet and boggy. Drains are formed

on the south-east side for the purpose of giving current to the super-abounding moisture. When the drains are choaked through neglect, or when the rains are unusually heavy, this part of the Morne, notwithstanding its high elevation above the level of the sea, is almost swamp, the whole flat part of the shoulder literally bog. The winds are generally strong at the summit of the Morne. They strike with disagreeable impression on those who inhabit the barracks, which stand immediately upon the brink of the declivity at the north-west; and, according to the report of the medical officers who are charged with the care of the sick at this station, the barraeks at the brink send more subjects to the hospital than the others. The upper part of the Morne, viz. crown and shoulders, is cleared of wood and brush-wood;—pains are even taken by the garrison to keep down the luxuriant grass; for, according to opinion, and, probably according to fact, the health of the troops corresponds in some degree with the order of the exterior.

The barracks on Morne Fortuné, like most of the barracks of British construction, are in shed form with flap-board windows. Some of them have narrow open galleries on one side. The most of them, like barracks in other islands, are so little raised from the ground that the moisture of the soil from defective drainage, together with water and nuisances that are occasionally thrust through the crevices of decayed floors by the slovenly soldier, forms a swamp, at least a damp exhaling

surface beneath the floor of the dwelling ; thus creating a cause of disease which does not literally belong to the soil. Winds are here often violent ; rains heavy and of long continuance ; the protecting provisions are generally imperfect ; the soldier is uncomfortable in his feeling, his health exposed to danger from artificial concentration of the causes of disease.

The barracks on Morne Fortuné are exposed at all times to the impulse of violent winds, occasionally to the fury of hurricanes. It is therefore necessary that extra provision be made, in the form of construction, so as to anticipate the damage or injury that may accrue from violence. As the winds strike with greater force on the barracks at the brink of the summit than on those which are somewhat removed from it, and as the barracks that are placed on that eminence send more subjects to the hospital than others, it is obvious that the brink position ought to be avoided. This point is clear enough ; but besides removal from the immediate brink with a view to avoid the direct blast, it is farther recommended that a range of wide spreading trees be planted around the margin of the summit on all sides, not only as breaking the violence of the winds, which whirl in eddies, as they ascend from the vallies, and act injuriously by direct force, but as changing the character of the exhalation by the interposition of a close foliage :— such protection could not fail to be important as preservative of the health of the troops who com-

pose the garrison ; it would even be a protecting shield against the violence of hurricane.

It may be considered as a medical axiom of demonstrable truth that military barracks in all countries, but more especially in tropical climates, than others, ought to be erected upon pillars, so as to be thoroughly ventilated underneath, or that they ought to be erected upon a floor of terrace, brick or pan-tile, through which no moisture can ascend. The frequent occurrence of hurricane in St. Lucia renders the first less advisable ; consequently the second is the best measure to be adopted. A floor of terrace composition prevents the ascent of moisture from the surface of the bog ; it therefore constitutes the base of a safe dwelling. The properties of the superstructure, when this is obtained, may be explained in a few words. It is evident that the roof of what is properly termed barrack ought to be wide, that the capacity of covered space ought moreover to be augmented by the addition of a jalousied gallery on all sides, that the eaves of the roof and gallery be so closed that wind can find no place for entrance underneath, the roof itself so rounded that wind can find no point on which to take hold. If the terrace floor prevent the ascent of damp or vapour from the boggy soil a main point is gained ; but it is necessary, in order that the effect be complete, that the floor be raised, and the position so secured by exterior drains that there be no danger of its being inundated by the heaviest rains which so frequently occur at this station.

The endemic disease of St. Lucia is properly a fever of the intermittent or remittent type, sometimes mild, regular and easily cured; sometimes violent, anomalous and fatal. The mountains, which are mostly conical, seem to be calculated, by their forms, to draw water from the clouds: many of the vallies have little declivity, so little that the falling rain is collected as it were into a basin; and, while water is thus collected, the soil has so much tenacity that the water remains in it, until it be raised in vapour by the power of the sun. The summit of Morne Fortuné, which, as already observed, exceeds eight hundred feet in height, does not deserve, though so elevated above sea level, to be ranked among the healthy positions of the West-Indies. Fevers of the intermittent and remittent type predominate. The disease is radically periodic; the paroxysms are however so crowded upon one another, on many occasions, that a type can scarcely be traced. The disease is sometimes rapidly fatal as where the force of its action is chiefly manifested in the cranial cavity; it is protected in others, as where the principal force is exerted upon one or other of the parts that are contained within the abdominal parietes. The dysentery appears occasionally as primary; it is frequent as secondary, viz. the sequel of ill cured intermittent. It has been remarked, by persons who live in the vicinity of Morne Fortuné, that when the military, who inhabit the Morne, suffer severely from sickness, the inhabitants of the town of Castrie are generally in

good health ; and on the contrary, that, when the inhabitants of the town are sickly, the garrison on the height is comparatively healthy. The Morne is a bog in wet weather, Castrie is then an inundated swamp ; in continued dry weather, the Morne has a hard and firm surface ; Castrie is then a swamp advancing to exsiccation. The fact is obvious, and presents itself as a cause of what takes place ; whether it be the whole of the cause or not I do not pretend to know.—The table, No. I., in the annexed return, exhibits a view, for a series of years, of the salubrity of the island of St. Lucia, comparatively with other islands in the Charibean chain.

#### CASE I.

Morne Fortuné, *August 28th, 1814.*—Frederick, third battalion, sixtieth regiment, aged twenty-eight, full habit, attacked with symptoms of fever at five o'clock, P. M. of yesterday, and admitted this morning into hospital,—then under remission. Two, P. M.,—the paroxysm recurred with violence, accompanied with difficult respiration and sharp pain in the right side; the lips and mouth dry and parched; the tongue white and foul; the pulse full and hard; the skin hot, slightly moist; pains in the loins and limbs; no sickness at stomach: warm bath: bled to forty-eight ounces: calomel gr. x., James' powder gr. v. in bolus. 29<sup>th</sup>,—breathing rather difficult; skin warm; tongue foul and moist; pulse full: warm bath: bled to thirty-two ounces: calomel and James' powder repeated. 30<sup>th</sup>,—sense of oppression at the chest; skin warm; pulse full; bowels open: warm bath: aq. ammon. acet. with thirty drops of antimonial wine. Evening,—the skin open; the breathing free and easy. 31<sup>st</sup>,—pain at the temples; pulse quick; heat pun-

gent ; slight moisture on the skin : blister to the temples : warm bath : diaphoretic draught repeated. Evening,—free from pain ; no uneasiness ; skin cool. *September 1st*,—skin warm : diaphoretic draught repeated. *2nd*,—slight heat of the skin ; pulse natural ; body open. *9th*,—discharged to duty.

#### CASE II.

Morne Fortuné, *December 17th, 1814*.—Helmer, third battalion, sixtieth regiment, aged thirty-nine, spare habit, attacked with fever at eight o'clock, A. M. and admitted into hospital the same day. Pain in the head and loins severe ; the pulse quick and small ; the skin hot and dry ; the eye watery ; the tongue foul and dry ; a sense of constriction at the fauces ; body costive : purging mixture : warm bath : blister between the shoulders : aq. ammon. acetat. with camphorated mixture at frequent intervals during the day. *18th*,—symptoms relieved ; partial perspiration : warm bath : camphorated mixture : James' powder. *19th*,—symptoms aggravated ; sense of oppression at the chest ; tongue dry and foul ; vomiting troublesome ; pulse quick and small : medicines continued : effervescent draughts at frequent intervals : blister to the head. *20th*,—delirium ; eye yellow ; heat of the skin below natural ; pulse quick ; tongue dry and foul ; debility great ; irritability at stomach considerable : medicines continued : mercurial ointment by friction. Evening,—vomiting troublesome ; hickup ; blister to the stomach. *21st*,—much as yesterday : debility increased ; respiration laborious ; pulse indistinct ; tongue dry and foul : medicines continued. Evening,—mouth sore, as if from mercury. *22nd*,—low delirium ; pulse intermits ; stomach rejects every thing ; comatose. Died at Noon. *Opened*.—The liver enlarged,—the exterior more pale than natural, the interior gorged with black grumous blood ; the inner coats of the stomach slightly inflamed,—loose in some places, as if in the act of separating ; thick and viscid bile in the gall bladder in small quantity ; much bile in the interior of the intestinal canal. The head not opened.

*Island of St. Vincent.*

The island of St Vincent, seventeen miles in length, and twelve in breadth, lies in the 13th degree of north latitude. The land is high,—among the highest in the Charibean chain. The hills and mountains are mostly in ridge form; the descent to the shore is generally rapid; the vallies which intervene between the ridges are ordinarily of picturesque appearance, and often beautifully grouped together. The soil of St Vincent stands high on the scale of fertility; the climate is equal in point of salubrity to that of any of the islands in the West-Indies.

The town of Kingston, in the environ of which the military force is stationed, stands at the margin of a small bay, bounded on the east, north and west by high ground, of different elevation at different points. The actual site of the town is nearly level with the beach; the soil is a mixture of alluvial sand with vegetative mould carried down from the mountain by torrents of rain. The length of the beach is less than one mile; the depth of the level surface a few hundred paces. The town stands thus in the pit of an amphitheatre formed by encircling heights, the sides of which are steep, but practicable. The height on the north rises to nine hundred feet above sea level; it does not exceed six hundred on the west, and three on the east. An obtuse ridge descends from the central height, on each side of which there is a depression or shal-

low valley somewhat boggy in its soil, and watered by two small streams which fall into the bay.

The military force, which garrisons St. Vincent, is stationed at three different places, viz. Fort Charlotte, Old Woman's Point and Dorsetshire-hill. Fort Charlotte, which is head quarters, occupies the summit of the extreme point of the ridge which forms the west side of the amphitheatre in which the town stands: the elevation of the ridge is about six hundred feet above the level of the sea. The barracks in which the troops are lodged are casemate barracks of two stories:—good according to the form of construction, and in good repair; but ventilated, or rather winnowed by thorough draught. The persons who occupy them have no place to which they can retire from the direct current which sweeps the interior; they are thus necessarily exposed to vicissitude of temperature, even to the impulse of strong winds which issue, in eddies, from the ravine on the west and rush through the narrow flap-board windows as through a funnel. Jalousied doors and jalousied windows were suggested, by the author, as a remedy against the injurious effect of the impulse: the estimate of the expense exceeded the economical regulations of the ordinance service, and nothing was done.

The barrack at Old Woman's Point stands on a flattened surface, on the snout or profile of the ridge of height which forms the west side of the amphitheatre, in which the town of Kingston stands. The surface, upon which the barrack is

erected, appears to be about two hundred feet above the level of the sea. It is not bog ; but it is frequently filled with moisture by the rains which, falling on the height, penetrate the porous soil, descend through the declivity with briskness, move slowly or stagnate at the flat surface where the barracks are placed. The barrack at Old Woman's Point has no thorough ventilation underneath ; and, what with the dampness of the locality and the influence of exhalations conveyed by currents of wind which sweep the foul surfaces which are on both sides of the promontory, the position is not well chosen as a position for health : it appears in fact, by reference to hospital returns, to be the source of the more aggravated forms of fever which occur in this island.

Dorsetshire-hill, another of the military stations in the island of St. Vincent, rises to the height of nine hundred feet above the level of the sea. It is in the rear of the town, and on the highest part of the ridge which encircles the town. It is open and bare, but not rocky ; the air is pure and refreshing ; the temperature moderate ; rains are frequent ; winds often boisterous and squally ; the barracks are flimsy shed structures. The form of dwelling is inconvenient ; the quarter is notwithstanding desirable, and generally coveted by the troops. The eye commands a wide prospect from Dorsetshire-hill ; the mind expands with satisfaction as gratified by the command of the eye ;—at least sensations of pleasure from this source strongly impress the tran-

sient visitor. They are more likely to be confirmed than diminished by residence : it may therefore be presumed, that, if barracks, with spacious jalousied galleries and other conveniences which military barracks require, were erected upon an eligible part of Dorsetshire-hill, the soldier would have enjoyment in himself ; and, if there were no other duty to be done except that which belongs to the immediate station, his health, it is reasonable to believe, would be little more interrupted by the effect of climate than it would be in Dorsetshire in England.

St. Vincent may be regarded as a healthy inter-tropical island ; for, though British troops have sustained considerable sickness and mortality at different times on this station, the cause may be traced to errors in choice of position, construction of quarters, or other contingency, rather than to what can strictly speaking be called influence of climate. The barrack at Old Woman's Point is exposed to the action of causes which ordinarily occasion fevers of the periodic type, more or less aggravated : the casemate barracks are exposed to the impulse of causes which produce forms of prominent local action, viz. pneumonic, or dysenteric. The ophthalmic form of disease was frequent, and sometimes, in a manner epidemic in the ninetieth regiment during its residence in St. Vincent.—I cannot ascertain the cause to which its frequency was to be ascribed. Fort Charlotte, Old Woman's Point and Dorsetshire-hill are at different levels

above the sea, and as all the members of the garrison communicate occasionally in their common duties, they are occasionally exposed to vicissitude from change of temperature.—The Table, No. I., exhibits a view of comparative salubrity.

#### CASE I.

St. Vincent, (station not marked,) *January 1st, 1814.*—  
Walker, Royal York Rangers, aged thirty-eight, habit full, attacked yesterday and admitted into hospital to-day. He complained of head-ache; the skin was cold and clammy; the pulse one hundred strokes in the minute; the tongue foul—incrusted; griping and purging distressing; stools mucous and bloody: solution of sulphate of soda: symptoms relieved. *4th*,—attacked in the night with violent delirium, which is not yet abated; the pulse one hundred and twenty strokes in the minute, and full; the skin hot and dry; the heat of the body at one hundred degrees of Fahrenheit's scale; the countenance livid,—the expression of it unsatisfactory; the tongue white; purging suppressed; the eye suffused and wild; jactation and restlessness extreme. Bled to the amount of forty ounces: the head shaved and covered with a blister: calomel with cathartic extract: solution of salts. *5th*,—relieved. *6th*,—head not clear; the countenance composed; the body open; the pulse one hundred strokes in the minute; heat moderate. Calomel and James' powder. *7th*,—medicines continued. *8th*,—pulse one hundred strokes in the minute; heat above natural; skin moist; body freely open; perspiration copious; head relieved: calomel and James' powder. *9th*,—solution of salts with tar-tarized antimony. *10th*,—infusion of bark. *12th*,—convalescent. *29th*,—discharged.

#### CASE II.

St. Vincent, (station not marked,) *November 1st, 1813.*—  
Henley, Royal York Rangers, aged twenty-four, of a full

habit, was admitted into the hospital to-day with symptoms of fever of extreme aggravation, the disease having been of some days continuance before he was brought under medical notice. The pulse beat one hundred and twenty strokes in a minute; anxiety and restlessness were extreme; the head-ache was distressing; there was, withal, much agitation and alarm. Bled to the amount of forty ounces: calomel and jalap: at a short interval, solution of salts: purging clyster. *2nd*,—blister to the head and breast: calomel and James' powder: aq. ammon. acetat. with antimonial wine. *3rd*,—low delirium; the pulse one hundred strokes in the minute—tremulous and unsteady; the heat moderate; the skin suffused with yellow; anguish at stomach. *4th*,—purging clysters—two or three times a day: blisters to the legs and between the shoulders: carbon., ammon. and camph.: æther, opium, wine. Pulse one hundred—intermitting; countenance anxious, with marks of mental irritation. *5th*,—coma; laborious respiration. *6th*,—coma; pulse intermits; eye glassy; skin cold and clammy; subsultus. Died. *Dissection*.—The vessels of the dura mater distended and numerous;—a quantity of coagulated lymph on the surface. Red vessels numerous in the pia mater, and also in the substance of the brain. Nothing remarkable in the thoracic and abdominal cavities.

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*Island of Grenada.*

The island of Grenada, twenty-eight miles in length and thirteen in breadth, lies in 12 degrees north latitude. It is mountainous, the interior mountains of considerable elevation; the ascent comparatively gradual at windward, generally abrupt at leeward; the scenery upon the whole picturesque and pleasing to the eye. The site of

George town, near which the military force is stationed, is of an irregular surface, the environ studded with conical eminences, or intersected by ridges and ravines so disposed in their groupings, as to present an appearance of amphitheatre, variously diversified, picturesque in itself and tastefully cultivated at different places.

The entrance into the harbour is narrow, guarded by a projection of rock on each side. A military work and barrack, viz. Fort George, occupies the projection on the north. The harbour is capacious and nearly circular, well protected, perhaps the best protected from violence of wind of any in the West-Indies. The greater part of the town stands upon an irregular declivity at the north side of the harbour upon a base of rock, covered at different places with clay or rich vegetative soil. The whole of the *enceinte* within the height is declivous, mostly cultivated, and not swampy, except at the south-east part of the harbour; George town might therefore, in so far as respects salubrity, be denominated one of the best sea coast positions in the West-Indies.

A ridge of height, called Hospital-hill, forms part of the semicircle which environs the town and harbour. The hill is on the north of the harbour; and on the north of the hill, the river St. Jean descends from the interior mountain through a deep ravine, which, expanding as it approaches the sea coast, becomes foul and swampy at its greatest expansion. The exhalations which arise from this surface, like

exhalations which arise from other foul grounds, are injurious to human health. They are prevented by the interposition of the hill from striking directly upon the site of the town ; and they only strike upon the summit of the height where the barracks are placed, when the wind blows from the west, which does not often happen. A great deal of rain falls at George town in ordinary seasons ; the atmosphere is thus frequently saturated with moisture. The temperature of Grenada, and even of George town is moderate as the temperature of a tropical climate, the thermometer rarely rising higher than seventy-four or seventy-five in the mornings during the winter months, eighty or eighty-two at noon. It is usually eighty-six or eighty-seven at noon in summer, sometimes eighty-nine, rarely ninety :— it is ten degrees lower at the highest habitation on the central mountain than it is at the sea coast.

The military barracks, in Grenada, are among the best in form of construction of any in the British islands : they were in decent repair in 1813. The height of the rock, upon which Fort George and its barrack are erected, appears to be upwards of two hundred feet above the level of the sea. The barrack is substantially built, and not in bad order internally. The barrack on Hospital-hill, the height of which is about five hundred feet above the sea level, is also a good barrack ; at least substantially built and not uncomfortable to the inhabitant. The barrack at Fort Frederick on Richmond-hill, which is a ridge of height about seven

hundred feet above sea level, has advantages over the others in position, in form of construction and exterior adjustments. The barrack at Fort Adolphus, which is on the same ridge of height as Fort Frederick, is also a good barrack, in good order, occupied at present by the convalescent, or invalid part of the garrison.—The barracks in the island of Grenada, while good comparatively as barracks, do not, at present, (1813) contain more than one third of the numbers they are calculated to hold according to the regulations of the barrack department.

The hospital, which is built upon one of the ridges of Richmond hill, is constructed upon a good plan comparatively. Some parts of it are now (1813) going into decay, and some parts necessary to the comfort of the sick and even to the effective treatment of disease are wanting; it is notwithstanding, such as it is, the most commodious hospital perhaps in the Windward and Leeward island station.

It would not, in throwing the eye over the site of George town and the stations of the troops in the vicinity, be expected that endemic sicknesses of the more aggravated degree should be of frequent occurrence at this station. The hospital returns of past years, notwithstanding the favourable appearance of the locality, furnish evidence that sickness has been sometimes considerable, and that loss by death has been sometimes high in proportion to the number of the sick. The face of the

country is various in the environ of George town, the surface unequal, viz. hills, ridges of hill, valleys, ravines and depressions, the whole so connected in the grouping that, while the temperature varies, the soldier, exposed to the effects of variation in passing from one station to another, is not unfrequently struck by currents of the comparatively cold winds, which rush through the ravines or hollow ways of the precinct with a forcible and disagreeable impression, to which is not unfrequently ascribed the attack of a subsequent indisposition, viz. rheumatism, pneumonia, dysentery or catarrh; the latter of which, when neglected at the commencement, often forms congestion in the lungs which terminates ultimately in what is called consumption. The remittent fever is, as in other countries, more frequent in Grenada at certain seasons of the year than at others. The concentrated endemic, called yellow fever, occurs occasionally, principally among those who are strangers in the climate. Epidemics of an unusual kind occur at uncertain intervals; a memorable one was observed in the year 1793.—The Table, No. I., in the annexed return, shows the relative degree of salubrity of the island of Grenada with other islands in the Charibean chain.

*Island of Cariacou.*

There are some islands near Grenada, known by the name Grenadines, to the principal of which, Cariacou, a detachment of European troops, consisting of a sergeant and twelve men, was sent from the garrison of Grenada for a military purpose in the month of September, 1812. Cariacou, with the exception of the town of Hillsborough and its environ, is said to be healthy. Hillsborough stands upon the west beach, leeward of a swamp. The detachment was lodged in a small stone building, on an eminence about two hundred feet above the level of the sea, windward of the town and leeward of the swamp. Thus exposed, it suffered extremely from sickness: four persons died within two months; and, at the end of November, when the detachment was withdrawn, every one was ill, and some in great danger from the severity of disease.—The fate of the Cariacou detachment furnishes a striking example, though on a small scale, of the noxious influence of winds which pass over swamps and strike upon positions which are above their level.

## CASE I.

(Quarter not marked), April 23rd, 1814.—Garret, aged twenty-six, habit full, was attacked with symptoms of fever on the 21st, and admitted into hospital to-day. He, this morning, complained of slight head-ache; the pulse ninety-six in the minute, and feeble; the heat of the body eighty-four; the skin

moist; the tongue white and dry; the stomach irritable; evacuations by stool thin, and so sudden as to appear almost involuntary; pains in the limbs and loins. Calomel gr. x., jalap gr. xx., followed, at an interval of two hours, by a solution of salts: the evacuations by stool free: a blister was applied to the head. 24th,—pulse one hundred and twenty—feeble; heat at the surface seventy-eight; skin moist; body open; stomach retentive; yellow suffusion over the whole body. Calomel gr. iii. four times a day: aq. ammon. acetat.—an ounce every two hours. 25th,—restless; delirious; the pulse scarcely perceptible; tongue and fauces parched; skin cold and clammy; eye red: blisters applied to the legs: æther and opium at frequent intervals. 26th,—died about midnight in convulsion. *Dissection*—Great fulness in the vessels of the brain, giving an appearance of inflammation; the membranes yellow; the liver enlarged and of a livid colour, particularly the left part of it; the inner coat of the stomach much inflamed.

#### CASE II.

(Quarter not marked), August 10th, 1814.—Smith, aged twenty-eight, of a full habit, was admitted into hospital to day, complaining of purging, &c. viz. frequent evacuation of mucus mixed with blood, pain in the hypochondria, pulse ninety, skin dry. Bled to the amount of three pounds:—faintness supervened. Calomel gr. x jalap gr. xx., followed by a solution of salts at an interval of two hours: the evacuation by stool free. 11th,—pains relieved; difficulty in making water; pulse ninety-five—small. 12th,—free from pain, with free discharge of urine: ten grains of nitre three times a day. 13th,—stools—mucous, scanty, and frequent: castor oil: stools more free. 14th,—no material alteration: calomel gr. ii., ipecacuan. gr. ii., opium gr.  $\frac{1}{2}$ , every four hours. 15th,—pain in the hypochondria; the stools sanguous: medicines continued. 16th,—pulse one hundred and twenty in the minute; skin cold and clammy; tongue clean; no material pain. 17th,—pulse one hundred and thirty; skin cold and clammy; medicines continued:

clyster. 18th,—died. *Dissection.*—The colon and rectum much inflamed throughout,—ulcerated internally; a gangrenous opening at the sigmoid flexure, from which matter was discharged into the cavity of the abdomen.

### CASE III.

(Quarter not marked), *September 6th, 1813.*—Harris, aged twenty-eight, of a thin habit, was attacked at ten o'clock this morning with symptoms of fever. The pulse was full and quick; the skin hot and dry; the tongue foul; pains in the head and back severe: calomel and jalap. 7th,—solution of salts, the calomel and jalap not having operated: sponged with vinegar. 8th,—pulse small and frequent; skin hot and dry; no sleep: James' powder: pediluvium: anodyne at bed-time. 9th,—much as yesterday; strength prostrated: camphorated mixture with vitriolic æther. 11th,—pulse small—slow; urine high coloured and scanty; skin very yellow—damp and clammy: wine. 12th,—stomach irritable; tongue black and dry; hickup: effervescent draught every two hours. 13th,—much the same. 14th,—prostration of strength; stomach retentive; eye sunk; pulse small and feeble; urine suppressed. Cream of tartar beverage, with spirit of lavender. 16th,—eye red. 17th,—much as yesterday: camphorated mixture with æther: anodyne at bed-time. 18th,—good rest; tongue clean comparatively; pulse moderately full; eye less red; urinary secretion free—the water without sediment. Infusion of bark: five gills of wine in twenty-four hours.—The health improved gradually from the 18th to the 29th, when he was sent to the convalescent quarter.

### CASE IV.

*December 1st, 1812.*—Elliot, (one of the detachment from Cariacou) aged forty-one years, eight years in the West-Indies without having experienced any sickness of consequence, was seized, soon after he arrived at Cariacou, with a severe cold

fit, followed by a hot fit which declined without perspiration. The first attack was near noon; the cold stage lasted five hours; the hot stage not more than two. The paroxysm returned next day about the same hour; it declined as the former had done—without perspiration, or other gross evacuation. The disease went on in this manner until to-day, when the subject of it was admitted into the hospital at Grenada. The skin was then very yellow; the pulse was small and frequent; the animal power remarkably diminished. Elliot had a paroxysm of fever on the day on which he was admitted into the hospital: from that, to the 18<sup>th</sup>, there was no distinct accession. The pulse was small and frequent; there was no desire for food; the legs were œdematosus; the abdomen considerably distended; the feebleness increased. 19<sup>th</sup>,—an accession of fever, preceded by a sense of coldness, came on about three in the afternoon, and continued until midnight. 20<sup>th</sup>,—cold shivering of long continuance commenced at four in the afternoon.—There was no distinct accession of febrile paroxysm from this date; the strength declined; the skin continued yellow; the lips and gums pale; the pulse small and inelastic; the eye without animation—pearly white and dull: the abdomen was distended with water.—He died: there is no note of the dissection.

## CASE V.

*April 13<sup>th</sup>, 1813.*—Mathews, one of the detachment from Cariacou, aged forty-seven, was attacked about noon with vertigo, &c. in about a fortnight after he arrived at Cariacou. The vertigo was succeeded by aguish rigors, which were followed by a hot fit; severe vomiting was prominent among the symptoms. The paroxysm lasted about four hours, subsided, but did not terminate by distinct solution. The accessions returned every day at the same hour for three weeks; the course was then suspended, but health was not restored. Mathews was received into the hospital at Grenada on the 6<sup>th</sup> of December, 1812, in a state of extreme feebleness. He lingered until

this day, when he died. The body was opened.—A great quantity of yellow serum was found in the cavity of the thorax and pericardium. The lungs adhered slightly to the pericardium and diaphragm; the substance of the lungs was dotted with black points, and streaked with black lines,—the general mass flaccid and of a deadly white colour. The heart was increased in size,—pale and flaccid throughout; the apex covered with a coating of coagulated lymph;—the surface had the appearance as if it had been parboiled in the pericardial fluid. The liver was enlarged in size, the biliary ducts were filled with chocolate coloured bile; the gall bladder was distended with it. There was more than the just quantity of water in the ventricles of the brain; there were no perceptible marks of derangement in the structure of the substance of it.

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### *Island of Tobago.*

The island of Tobago, about thirty miles in length, and twelve in breadth, lies in the eleventh degree of north latitude; the height of the central ridge of mountain about three thousand feet above the level of the sea. The surface of the island is considerably varied by hill and dale: clay predominates in the soil. The heat is moderate as the heat of a tropical climate, the thermometer seldom rising higher than the eighty-sixth degree of Fahrenheit's scale at any time of the day, often not so high as eighty. Rains are frequent and heavy; the atmosphere is ordinarily surcharged with moisture.

The town of Scarborough, the principal town in the island, occupies some part of the west side of a flattened conical eminence, which rises to the height of five hundred feet above the sea level. The soil of the height is open and loose, with inter-mixture of slate; the ascent gradual, and so equal that water does not stagnate any where upon its surface. Fort King George, three small barracks in shed form, and some other necessary buildings occupy the extreme summit. Two of the barracks are at present, (1813) inhabited by troops; the third, being much decayed, is made a receptacle for lumber. One of the two inhabited barracks is erected upon pillars, so as to be ventilated underneath; the other is not raised from the ground by more than one foot and a half; and, as such, it has no ventilation underneath. Whether from want of ventilation or other less obvious cause, the low barrack generally sends a proportionally greater number of sick to the hospital than the other. It is moreover reported that the decayed barrack, which is also low, was in like manner, while inhabited as a barrack for soldiers, a sickly quarter. The crown, or extreme summit of the height, is only of small extent. There are some flattened surfaces at the western shoulder covered by batteries, barracks and other buildings; there is no level surface for military evolution, scarcely for parade. The whole of the quarters are sheds rather than houses; the most of them are at present in what may be called a crazy condition.

The cone-like eminence upon which Fort King George is erected, projects into the sea beyond the line of the coast, so as to form shallow bays on the east and west. The bay on the west is the deepest: it is the harbour or road for the shipping which rendezvous at Scarborough. The shores on the east are low, at some places swamp. As such, they emit exhalation which, carried by the ordinary current of the winds to the summit of the height, is supposed to act injuriously on the health of the troops, even to wind round the height and to act injuriously on the health of the inhabitants of the town which occupies part of the western aspect of the hill. Fort King George was at one time unhealthy; it is now, as appears by a comparative view of the sick returns of the army, one of the healthiest quarters in the Windward and Leeward island station. The means through which it was made so, as not of common application, deserve to be brought under public notice. The fact is strong; but it has not made useful impression upon the official authorities. Fort King George stood, in 1803, under the lee of a swamp, at a distance of nearly one mile, and at an elevation of five hundred feet above the level of it. The exhalations which arose from the swamp, carried to the height by currents of strong wind, were supposed to be injurious to the health of the garrison. The cause was obvious; and the effect was so destructive at one time that the commanding officer of the Royal Scotch regiment which then formed the garrison, acting with the impulse of a

soldier, determined to drain the swamp by the labour of the men rather than to be destroyed in detail by its pernicious exhalations. He attempted it and succeeded. The fact is authentic, and it is important. It furnishes unequivocal proof that the European is not less capable of sustaining labour in tropical climates, even severe field labour, than the African; and it is further of value as it shows that the most of what relates to the quarters and accommodations of the military may be effected by the military themselves without expense to the public. The planters lent the tools in the present case; the soldiers of the Royal drained the bog;—they did it without reward, and without injury to their own health. Fort King George is now a healthy station; and, as rendered so by the Royal, its future garrison may be supposed to bear an everlasting sense of gratitude to the memory of Lieutenant Colonel M'Donald, who conceived the feasibility of the undertaking from his own good sense, and executed it at his own responsibility. What he did was contrary to common medical opinion; it was moreover done without the sanction of the chief military authority.

Courland Bay.—A small detachment of troops, at present (1813) a serjeant's command, is stationed at Courland Bay, on the west side of Sandy Point, where there is a commodious landing place for an enemy. It is defended by sea batteries, which are manned by some artillery and a small detachment of the line. The plain which environs the bay is

flat and uncultivated—an absolute swamp in wet weather ; as such, it is unhealthy, particularly to Europeans.

The forms of disease, which prevail among the military who garrison Tobago, are similar to what they are in most other of the islands which lie in the same chain, viz. fever—intermittent and remittent, more or less obscure, dysenteric, pneumonic, rheumatic, &c. The ascent from the town of Scarborough, which is near the bottom of the hill, to the fort which is at the summit, is fatiguing to those who are obliged to make it on foot. The exhaustion occasioned by fatigue, whether incurred on duty or otherwise, renders the habit susceptible to the impression of the strong winds or heavy rains which are frequent on this height ; and from this cause, the health is reasonably supposed to be injuriously affected. Pneumonic and dysenteric forms of fever are common ; the remittent, or gastric form is not rare, the ardent continued or yellow fever occurs but seldom. The action of the cause, which is originally on the gastric system, is often transferred at a certain period of its course to the cerebral, thereby producing an entire change in the symptoms. The fevers which appear to have been contracted at Courland Bay are generally periodic at the commencement, often intermittent ; they sometimes become continued at an advanced period—slow and tedious in their course, and imperfect in the terminations.—The annexed return, in Table, No. I., shows the relative salubrity of

Tobago with other islands in the possession of the British, since the year 1803.

### CASE I.

Fort King George, *August 23rd, 1814.*—Quail, Royal York Rangers, aged twenty-eight, of a full habit, was attacked in the morning with cold shivering succeeded by heat of skin, pain in the head and bowels, oppression in the chest,—amounting to sense of suffocation, tongue furred, pulse full and frequent. Bled in the evening, when admitted into hospital, to the extent of thirty-two ounces: warm bath: enema: saline purgative; several stools; relief. *24th*,—exacerbation of fever in the afternoon, with pain in the bowels and constipation. Calomel and James' powder,—repeated at short intervals: aq. ammon. acetat.: perspiration; no stool: an opiate was given at bed-time. *25th*,—no sleep: bled to the amount of twenty-five ounces: blisters to the head and chest: enema: calomel and jalap: no effective evacuation by stool: purgative repeated: two scanty evacuations: camphor: calomel: aq. ammon. acetat.; skin moist. *26th*,—restless in the early part of the night; some sleep towards morning; fur on the tongue of a dark brown colour; the skin nearly natural; the pulse small and quick; nausea constant; vomiting frequent; the pains in the head and chest are relieved. Jalap and calomel: effervescing draughts: nausea, with unavailing attempts to bring something up: emetic; bile ejected; comparative ease; two stools towards evening; vomiting continues. *27th*,—anxious and restless during the night; head-ache and pain of the chest recurred with violence; skin hot; pulse small and quick; vomiting continues; unwilling to speak; fur on the tongue—dark coloured; skin cool and covered with clammy perspiration. *28th*,—slept for a short time in the first part of the night; speaks less reluctantly; countenance more animated; severe pain, with a sensation of weight within the head; skin natural; pulse more full—frequent; vomiting. Bark and wine given every hour—not retained: mercurial inunction—four drachms every two

hours since yesterday: blister to the forehead. *29th*,—skin covered with cold perspiration; debility very great; head-ache less severe; some desire for food; tongue clean; the gums appear to be slightly affected by mercury; the vomiting continues. Evening,—the extremities cold; the tongue dry and dark coloured; delirious; convulsion; death at four in the morning of the *30th*. *Dissection*.—The stomach much distended; the spleen three times its natural size; the gall bladder distended with bile.

#### CASE II.

Fort King George, *July 21st, 1814*.—Sergeant M'Donald, R. Y. Rangers, aged twenty-three and of a full habit, had complained for some days of head-ache with disrelish of food. On this morning, the head-ache became severe, and continuing to increase in violence, he was sent to the hospital at eight o'clock, P. M. He was then delirious; the countenance was flushed; the tongue preternaturally red; the pulse small and quick; the skin cooler than natural. A cataplasm of mustard was applied to the head. *22nd*.—a solution of salts given by divided doses—mostly rejected; stools watery and scanty; the eye and countenance wild; the speech coherent; pains in the limbs severe. *23rd*,—somewhat better in appearance; restlessness with head-ache still continues: jalap and calomel: stools scanty. The head-ache and delirium returned with violence about eight o'clock at night; the extremities became cold; the breathing laborious—with pain in the chest. *24th*,—no sleep; delirium irregular; the countenance flushed; the head-ache less severe; the pain in the chest diminished; the tongue red; the pulse quick; the heat of the skin nearly natural; vomiting at intervals. Evening,—the heat of the skin above natural; affusion of cold water on the surface:—no perceptible effect. *25th*,—the extremities became cold at four in the morning; the countenance cadaverous; the skin damp and clammy; the pulse scarcely perceptible; delirium constant; convulsive spasms at frequent intervals. Died at two o'clock, P. M. *Dissection*.—

The vessels of the pia mater turgid with blood; lymph effused on the surface of the brain; more than the usual quantity of water in the ventricles; water effused at the base of the brain. The lungs inflamed, lymph effused in considerable quantity; the gall bladder distended with bile; numerous patched dots on the peritonæal coat of the intestinal canal.

### CASE III.

Fort King George, *June 22nd, 1813.*—Brown, Royal Artillery, aged twenty-two years, full habit, was attacked with purging and griping on the *20th*, about six in the morning, and sent to the hospital this evening. He then complained of severe pain in the left side, of pain in the bowels and in all the limbs; the skin was hot and dry: bled to the amount of thirty ounces. *23rd*,—the symptoms urgent, viz. difficulty in breathing, griping in the bowels, frequent stools—blood and mucus; the tenesmus distressing. Bled to the amount of forty ounces: solution of salts at intervals, viz. every second hour: the skin hot and dry; the pulse hard and contracted—one hundred strokes in the minute. Evening,—better; the pain in the side and bowels still considerable: pulv. ipecacuan. comp. gr. xxv. *24th*,—the night comfortable comparatively; the pulse hard and more than one hundred strokes in the minute; pains in the side and bowels severe. Bled to the extent of forty ounces in the afternoon:—pain relieved, not entirely removed; no tenesmus; no blood or mucus in the stools,—the number not beyond four in the course of the day. Evening,—the pulse hard and full: compound powder of ipecacuanha repeated. *25th*,—pain in the chest during the night; skin moist and soft; the pulse hard; no purging: compound powder of ipecacuanha. *26th*,—the pain in the chest rather severe; the pain in the bowels returned. Bled to the extent of thirty ounces: solution of salts at intervals: the pain in the chest relieved after the bleeding. *27th*,—no pain in the bowels; pain severe at the lower part of the chest. Bled to thirty ounces: blister to the seat of the pain. *28th*,—entirely free

from pain in the chest; pulse ninety-six and rather soft. *29th*,—legs and feet somewhat œdematous; abdomen rather distended—and tense withal. Ten grains of sulphate of iron three times a day. *July 4th*,—appetite good; abdomen distended; legs still swelled. Jalap gr. xxv.: mercurial ointment rubbed upon the belly:—the friction continued for a length of time. *5th*,—the jalap operated well: the sulphate of iron continued. *7th*,—the swelling in the abdomen subsides. *10th*,—the bowels are costive: jalap repeated. *13th*,—the mouth affected by mercury. *15th*,—griping in the bowels with sickness at stomach: salts: a grain of opium at bed-time. *16th*,—free from pain. *17th*,—purging and griping returned: salts repeated, followed by opium. *18th*,—free from pain: half a drachm of columbo three times a day. *24th*,—pain in the chest removed perfectly by the application of a blister. *August 4th*,—discharged in perfect health.

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### *Island of Trinidad.*

The island of Trinidad, about sixty miles from north to south, and thirty from east to west, lies in the tenth degree of north latitude. It resembles, in figure, the extended hide of an ox, the extremities of which, stretched towards the main, constitute the promontories which form the Gulph of Paria, the northern inlets of which have obtained the name of *bocas del drago*. Trinidad is upon the whole of a tame feature as compared with other islands in the Charibean chain; and it has this farther singularity in appearance that the central part is level, so as to bear the appellation of Lavana.

A chain of height, no part of which, as measured by the eye, exceeds an elevation of two thousand feet, forms the sea border on the north and south. The border on the north is the highest, the hills connected but not continuous. The intervening vallies or depressions are generally cultivated ; some of them are beautifully picturesque. A part of the great Lavana, which constitutes the central part of the island, is morass—absolute swamp and uninhabitable. Other parts of it are habitably dry ; and some are made dry artificially by draining and culture : the soil is various ;—clay seems to predominate.

The temperature of the island of Trinidad is moderate comparatively with the temperature of most of the Charibean islands. At Port of Spain, the principal seaport, and the present seat of government, the mercury in the thermometer was, on one or two occasions, so low as the sixty-seventh degree of Fahrenheit's scale, at six o'clock in the morning in the month of January, 1813 ; it was never higher than seventy or seventy-one at that hour during the whole of the month : the atmosphere was thus colder, by two or three degrees, than the water of the wells. But, though the temperature be low at Port of Spain at sun rise, it generally rises to eighty-two at noon, not unfrequently to ninety in the hotter months of the year. There is thus a considerable range in the scale ; but the change is not sudden, as it often is in the mountainous countries which are intersected by nu-

merous and deep ravines. The impression made on European feeling, by the fanning of the breeze in Trinidad, is refreshing, similar to the refreshment from breezes which pass through a moistened veil, or the foliage of a verdant garden in noon-day heat.

The feature of Trinidad is pleasing by mildness, rather than striking by grandeur. The hills are covered with timber trees always verdant, various in kind, and of great diversity in shade of colour. Vegetation is luxuriant; rain falls in abundance at most times, in torrents at certain seasons of the year. It generally falls at a stated hour, and ordinarily continues only for a stated time; an interval of fair weather is thus to be found for labour in the field, or other out-door occupation. Brooks, rivulets, and even large rivers are numerous in most parts of Trinidad: they overflow their bank in the season of the greater rains, inundate the plains, and sometimes, deserting their old channels, form new ones for their future course.

The acquisition of Trinidad, cost little blood as a conquest; it has cost much, and still costs a good deal annually by the ravages of disease. The loss is to be regretted,—the more to be regretted, as it is incurred not so much through the qualities of climate as through the operation of artificial causes, viz. the injudicious position of military quarters, and the erroneous principle under which they are constructed.—I shall endeavour to give an outline of the case with fairness: the scientific

reader will then have an opportunity of judging for himself.

The plain of Port of Spain, about two miles and a half in depth, and five or more in length, is bounded on the east, on the north and north-west by a semicircular ridge of height, different in degree of elevation at different parts of the circle, viz. from three hundred to nearly two thousand feet. The boundary waves irregularly, indented here and there by a protrusion of plain into the mountainous chain. The eastern part of this chain is the lowest in the circle; its southern extremity not being more, as measured by the eye, than three hundred feet above the sea level. It was cleared of wood, preparatory to culture; it was found, on trial, to be uninhabitable on account of insalubrity. The extremity of the ridge looks into the bay: as such, it was thought to be eligible for the erection of batteries and other military works for the protection of the shipping. The attempt to fortify was made soon after the conquest; the health of those who made it suffered so materially that the design was abandoned. The winds, which pass over the great Savanna, strike directly on the southern point of the ridge; they even wind on eddies on its western face to a considerable extent inland. The encircling ridge increases in elevation as it recedes from the shore, at the east of the town; at the western extremity, which, approaching the shore at the Cocorite, divides the plain of Port of Spain from the valley Dregò Martin, it is nearly two thousand feet in

height. This extremity, which is a considerable mass of mountain in obtuse conical form, has obtained the name of Hill Fort George. It is the highest point in the ridge which bounds the plain, and deemed the most important, in a military point of view, in the island. It is difficult in ascent, but not impracticable, except on the north which is precipitous. The soil of the hill is various, viz. gravel, clay and loam, limestone and other rock: the surface of it is irregular, diversified by ridges, ravines, shoulders, or comparatively level spaces. Besides a spring of water of good quality, sufficient in quantity for the purpose of the garrison, the hill produces timber for building of an excellent kind and in great abundance. The temperature of the air is moderate, rarely oppressive at any time of the day at the site of the barracks at the Queen's Redoubt; at the summit of the height, it is nearly ten degrees below what it is at Port of Spain. The soil of the plain Port of Spain consists of sand, gravel, clay and mud. The sand and gravel appear to have been carried down from the encircling height by the force of torrents in the season of the heavy rains; the mud, suspended in the waters of the river Oronoko, is accumulated upon a base of clay at the eastern shores of the Gulph of Paria, and particularly in the recess at the great Savanna, and the plain of the Port of Spain, which may be considered as a continuation of the Savanna. Two streams, one on the east and another on the west, descend into the plain

from the ridge of height which forms the land boundary ; considerable, as they issue from the ridge, but diminish gradually in their course through the plain so as to be scarcely visible at the shore, unless in the season of the heavy rains, when they often overflow and inundate the level grounds. The plain of Port of Spain is nearly level, the surface occasionally waved by ridges and depressions, the vestiges of inundations of a former period. The shore is muddy and foul throughout, the water shallow to a considerable distance at sea.

The town of Port of Spain, which touches the shore at the south side of the plain, covers a space of nearly one mile square. The site, surcharged to the surface with moisture, is rendered dry artificially by draining, paving, &c. The streets are spacious and generally paved ; the houses for the most part commodious and well-built. The lower, or marine street is laid upon foundations partly gained from the sea by embankment ; it is rendered habitable and healthy by a covering of stone pavement. The town of Port of Spain is open and well ventilated : it is not upon the whole unhealthy, except near the great Savanna on the east, and near a boggy gutter on the west, where intermittent and remittent fevers occur frequently, and sometimes manifest symptoms of a dangerous tendency.

The first of the quarters occupied by the military in the year 1813, contained a detachment of artillery, viz. a company of Foreign Artillery for the general service of the island. The barrack

occupies a muddy sea beach, covered by mangrove, at the east of the town : it is of one story, erected upon brick pillars about two feet and a half in height; as such, thoroughly ventilated underneath. Intermittent and remittent fevers occur occasionally among those who inhabit it ; the symptoms are sometimes violent, sometimes suddenly fatal ; the forms are rarely cachectic.

Orange-grove, the principal barrack for the military at Port of Spain, stands about one mile interior of the beach, one hundred paces west from the bed of the stream which skirts the eastern border of the plain, and four hundred or more west of the base of the ridge which forms the eastern boundary of the plain. The soil at the barrack site, consists of gravel, sand and clay intermixed. The locality is equal in salubrity, according to appearance, to the rest of the plain ; equal, if not superior to the town ; Orange-grove barrack has notwithstanding been at all times an unhealthy quarter to European soldiers. The barrack consists of several ranges of building in shed form, narrow, low roofed, and not raised from the ground by more than one foot and a half ; of course not ventilated underneath. The beams, upon which the floors are laid, are in contact, or nearly in contact with the clay of the soil ; the intervals between them are necessarily filled with exhalation from the damp earth. The floors, as advanced in decay, are moreover pierced in many places by holes, or rent by crevices, into which water is frequently thrown by the slovenly

soldier, in such quantity as to form, with the super-abounding moisture of the soil, an artificial swamp which exhales unwholesome vapour.

The Royal West-India Rangers occupied Orange-grove barracks during the years 1810 and 1811. They suffered from sickness, and sustained considerable loss by death. Fever—intermittent or remittent, was common among them. It was sometimes fatal in direct febrile form; it was oftener fatal in a degenerated form, which stands in the hospital returns under the name cachexy, dropsy or debility, the predominance of which gave to the Rangers the appearance of a corps of invalids. The cachectic form of fever presented itself frequently at Orange-grove barracks. Its frequency was imputed to climate, or locality. It may be fairly inferred, from the condition of health among the inhabitants of the town, the commissioned officers of the Rangers, and even the privates of the Royal Artillery who inhabit a quarter of less eligible locality than Orange-grove, that the cause which gives the cachectic tendency is artificial,—the product of faulty barrack construction rather than the product of climate simply as climate.

The Hill Fort George is an important point in the semicircular ridge which bounds the plain of Port of Spain. It is deemed the strong hold of Trinidad; and, as such, troops are stationed upon it as upon the citadel of the island. A battery, which bears the name of Queen's Redoubt, is erected on a flattened surface on the southern aspect of the

hill, at an elevation of eleven hundred feet above the level of the sea. A barrack is erected near the battery for the accommodation of troops. The barrack is of two stories; it has no gallery, no jalousy to the windows, and, from this form of construction, the inmate is exposed to annoyance from the rays of a dazzling sun, not unfrequently to chilling winds and driving rains. The position at the Queen's Redoubt is not in itself unsavourable to the health of the European soldier; it is not altogether exempted from the sweep of exhalations which float in the plain, particularly from such as arise from the Cocorite swamp and the valley Dregò Martin, when the wind blows from the west or south-west. The summit of the hill, which is nearly two thousand feet above the level of the plain, of a lower temperature by four degrees than the position at the Queen's Redoubt, thrown back considerably towards the interior, and, as such, presumptively placed without the line of exhalations which arise from the plain, seems entitled, by position, to rank as high on the scale of salubrity, as almost any of the inhabited places in the West-Indies.

St. Joseph.—The Royal West-India Rangers were removed from Orange-grove to the barrack at St. Joseph in the year 1812. The town St. Joseph, once the capital of Trinidad, occupies a site on the declivity of a hill at an elevation of one hundred and fifty or two hundred feet above the level of the great Savanna, eastward of the town of Port of Spain about eight miles. The barracks for

the troops which stand higher than the town are placed on the side of a gently inclined eminence of ridge form. The locality is pleasant, the environ clean, the soil gravel intermixed with clay—generally light and permeable. The barrack consists of three sides of a square, the frame wood and wattling, plastered with mud and clay; the roof low, the floor of board, laid upon beams which touch the ground. Rain descends from the clouds in torrents at certain seasons of the year in this island: it falls on the height and rushes down the declivity with impetuosity, sometimes inundates the barrack, often forms a pool in the barrack square so as to render the quarter uncomfortable and unwholesome. There are not any exterior drains; the floors of the barrack which are now (1813) half decayed, are level with the ground; the soldier may therefore be said to live upon the surface of a swamp made artificially by the barrack architect. The Rangers have not been altogether so sickly at St. Joseph as they were at Orange-grove; they are still sickly, and the cachectic form of fever still prevails.

The plain of Port of Spain and the parts of the great Savanna which lie to the south-east of St. Joseph, may be taken as examples of the general salubrity of Trinidad. Considered as plains, they do not appear to stand unfavourably on the comparative health scale of tropical climates. Many of the interior heights, even the occupied parts of the Hill Fort George, rank high, perhaps as high as

most inhabited places in the West-Indies. The southern extremity of the ridge which forms the eastern boundary of the plain of Port of Spain, is, as already observed, unhealthy—strictly speaking untenable. A small island which is close upon the main, attached to it at one point by a bank of shingle, west of the mouth of the valley Dregò Martin, presses itself upon notice on this occasion, as connected with what relates to the health arrangements of the British military. It would appear that an idea had been once entertained that military works, erected at a certain point on this island, might be available for the protection of merchant shipping, in the event of a hostile squadron appearing in the Gulph of Paria. A barrack was in consequence immediately erected for the accommodation of troops which were necessary for the manning of the works; and an hospital, on an extensive scale, was built for the reception of the sick of the new established post. The idea of affording protection to the shipping seemed to be the paramount consideration: it was not ascertained, before the barrack was built, whether the position was in itself tenable as a military post, or whether it was eligible as a healthy one. The site of the barrack was in fact found on trial to be under the command of a soldier's musket from the opposite point on the main; and the hospital at Pointe Gourde, the east point of the island, was found to stand in an atmosphere positively pestiferous, and untenable by Europeans. The project was

therefore abandoned ; the barrack was deserted ; and the materials of the hospital were sold, towards the close of the year 1813, to the engineer department, for a few hundred dollars.

The houses which were allotted to the reception of the sick of the army, in the island of Trinidad, in the year 1813, were little suitable for the purpose to which they were applied. The one which received the sick of the troops which were stationed in the plain stood upon a knoll, in a recess between projections of the ridge of height which bounds the plain on the east, not perhaps without the range of the noxious atmosphere which, arising from the great Savanna, winds in eddies on the lee of the ridge to the farthest extremity of the recess. It was the mansion-house of an unprofitable sugar plantation ; and, in so far as respects accommodation, it was superior to what British hospitals usually are in the West-Indies. The character of the locality was suspicious in point of salubrity : and moreover, the distance from the barrack—nearly one mile, was inconvenient for the proper execution of the medical duty. The hospital at Pointe Gourde was at this time (January, 1813) going fast to decay where it stood ; that it might not be altogether lost to the public, it was proposed that it should be removed, by the labour of the troops, and erected on Government ground, contiguous to the Orange-grove barracks. The proposition was one of common sense, and of obvious economy. The removal might have been

effected without expense, and with little difficulty : it implied no bargain or contract,—but it obtained no attention.

The hospital at St. Joseph was built expressly for the reception of sick. It is a wooden building of one story and one ward ; the roof is lofty,—the interior is spacious. It stands on the declivity of the height, at three or four hundred paces from the barrack. The floor touches the ground at the upper side ; from that cause, it is necessarily damp, and presumptively unwholesome. It was proposed, in the Inspection report, that an exterior drain, twelve feet deep, should be carried round the house as a channel for the torrents of rain which are frequent in this island, and which sometimes inundate it ; that jalousied galleries should be added on all sides ; that the windows should be jalousied ; that a proper cooking-place, a dead house, a bathing and receiving room, store rooms and other provisions necessary for the proper execution of the medical officer's duty should be made to it, with as little delay as possible : yet nothing was done so late as 1815.

The means of preserving the health of the military in the West-Indies, if they had been in reality considered by the higher authorities of the state, do not appear to have received, from such consideration, any advantages of execution that can be supposed to proceed from the lights of science. The arrangements which relate to the subject are better or worse contingently in most of the islands ; in Tri-

nidad, they are uniformly bad, so contrary to the reason of things, as examined theoretically, or as judged by effect in experience, that the uncharitable might suppose there actually was a design to multiply and aggravate the causes which destroy human health by choice of locality, or form of barrack construction. It is obvious, from what has been said, that the form of barrack construction, both at Orange-grove and St. Joseph, is so contrived as to concentrate the material of the cause which is supposed to produce fever, even to aggravate the cause which has the tendency to give the disease that particular form which prevails at these stations. The attempts which were made to establish military posts at the extremity of the ridge which bounds the plain of Port of Spain on the east, and at Pointe Gourde, west of the valley Dregò Martin, were made in the face of strong evidence of the unconquerable insalubrity of the locality ; they were only abandoned, when it was found, by actual experiment, that the position was useless for the purpose proposed, or that the destruction of life was beyond the ordinary means of supply.

The island of Trinidad may be considered as exempted from the sweep of hurricanes. Barracks, or military quarters may, for that reason, be erected upon pillars, so as to be thoroughly ventilated underneath ; and, as such ventilation is essential to healthiness in this climate, it is obvious to common sense that they ought to be so erected.

The soil, in the plains of Trinidad, is surcharged with moisture. Moisture, as exhaled by the sun, is supposed, even proved to act as a cause of febrile disease ; consequently its ascent, or its application to the subject is a point to be primarily guarded against. If barracks be not erected upon pillars, so as to be thoroughly ventilated underneath, it is indispensable to the preservation of health that the roof be erected upon a terrace floor, or pantile pavement laid on lime, as preventative of the agent of moisture. The island of Trinidad abounds with materials for building barracks, or other structures subservient to military purposes ; British regiments generally muster in their ranks a greater or smaller proportion of mechanics ; European soldiers are capable of supporting labour in tropical climates without injury to their health. These points are clearly ascertained ; and, being so, it may be fairly inferred that, if soldiers were permitted to work for themselves, they would soon put themselves into good and comfortable quarters, at little or no expense to the public ; and, what is of more consequence, with an improvement of their own health, and a marked accession of pleasure or satisfaction while they were employed in doing it.

The endemic disease assumes variety of form in the island of Trinidad as in the other West-India islands. Fevers of the periodic form, viz. intermittent and remittent, are the most common ; the concentrated continued, usually called yellow fever, is comparatively rare. The periodic, whether in-

termittent or remittent, is sometimes rapid in its course,—fatal on the third, or on the fifth day; sometimes it is slow—of a protracted course, suspended and renewed at intervals for a length of time; and so modified, in its mode of acting, as to engender congestion in one or other of the organs within the abdominal parietes, often in the substance of the heart itself, even through the whole of the cellular expansions, constituting a form of diseased organization which has obtained, from medical writers, the name of cachexy. The cachectic form of disease is more common among the British military in the island of Trinidad than in any other of the present British possessions. It is generally thought to be owing to peculiarity in the nature of the climate: there are grounds to believe that it is principally owing to the artificial qualities of the quarters in which the troops are condemned to live, the outline description of which, given in this place, may perhaps enable the reader to form an opinion in the case. The disease is often secondary, that is, the consequence of ill cured intermittent: it is sometimes primary, that is, a modified form of the action of the common cause which occasions fever in ordinary subjects, viz. the continued application of exhalations from damp quarters. Where the act is primary, the patient loses strength suddenly, sometimes without the formal accession of a febrile paroxysm. The countenance, in such case, becomes bloated and pale, tense or flaccid, according as the tendency of the act is pro-

gressive or retrograde. The volume of the body increases in most cases of the progressive form; the substance becomes firm, the figure plump and round, or statue-like. The skin is ordinarily smooth and polished; the eye of a pearly white, sometimes with a peculiar purplish tinge, sometimes with a cast of dingy yellow; its movements are languid and slow—without animation or expression: the tongue is often white, pale, smooth—not foul; the gums are generally pale. The volume of the body diminishes in the form which may be called retrograde. The flesh is flaccid; the tongue pale, clay coloured—reduced in size; the gums are bloodless—in a manner evanescent. Listlessness and aversion from motion, hurried respiration—amounting to panting in attempting to walk up hill, or to accelerate the pace on level ground, palpitation at the heart, fluttering and sense of suffocation, or gasping for breath under acts of exertion, comparative ease and comfort in a recumbent posture in a state of rest, are prominent characteristics of the cachectic form of disease. The retrograde is often rapidly fatal; the progressive is comparatively slow.—The table, No. I., in the annexed return, exhibits a view of the relative salubrity of Trinidad, with the other islands in the Windward and Lee-ward island station, since the year 1803.

## CASE I.

St. Joseph, *May 1st, 1813.*—Ryan, Royal West-India Rangers, aged thirty-four, of a full habit, seized with fever

and admitted into hospital the same day. Severe head-ache; pains of the back and vomiting of bilious matter; the tongue foul—loaded; the pulse ninety-eight in the minute; the heat one hundred; the skin soft; the body regular. Bled to the extent of forty ounces: the head shaved and blistered: jalap and calomel. *2nd*,—the pulse eighty—expanded and soft; heat ninety; skin moist; tongue moist; bowels freely opened. *3rd*,—symptoms the same. Calomel and James' powder every four hours. *4th*,—restless in the night; griping pain in the bowels; pulse ninety; skin rather dry; heat moderate as febrile heat; body costive. Purgative repeated: compound powder of ipecacuanha at bed-time. *5th*,—pulse natural; skin soft and pleasant to the touch; tongue clean and moist; body open. Bark in substance: three gills of Madeira wine daily. He recovered: the date of the discharge is not marked.

#### CASE II.

St. Joseph.—Millar, Royal West-India Rangers, aged twenty-six, temperament sanguine, recently arrived from Europe, was admitted into hospital (date not marked) on account of a quotidian fever of great severity. The fever was arrested by Peruvian bark, but health was not restored. The countenance became sallow and bloated; the tongue was white; breathing difficult; the abdomen distended; the extremities œdematosus;—there was, at the same time, much complaint of weakness. Brisk purgatives: steel: bitters:—temporary relief. A difficulty in breathing came on suddenly, with great anxiety and sensations of distress at the præcordia; the pulse quick and irregular. Died and was *opened*.—The lungs adhered on both sides to the pleura; they were not diseased in substance. Water was effused into the cavity of the thorax and into the pericardium in considerable quantity. The heart was itself enlarged; there was much mucus on the internal surface of the stomach; the coats of the intestinal canal were considerably thickened; the cavity contracted at different places to a comparatively small diameter; the mesentery was thickened, its

glands enlarged, some of them to the size of a nutmeg—the contents, cheese-like matter; the liver and gall were natural in appearance.

## CASE III.

St. Joseph.—Quinam, Royal West-India Rangers, aged forty-five, a hard drinker and a stupid man, was attacked some time ago (date not marked) with intermittent fever of great severity. The fever was arrested by Peruvian bark; the strength was not restored with the suspension of the fever. At the last admission into hospital, which was on the 19th of June, 1814, the countenance was pale and bloated, the breathing short and difficult; the legs œdematos; there was with a severe purging. Castor oil: frequent small doses of compound powder of ipecacuanha; a drachm of mercurial ointment rubbed upon the abdomen twice a day. The gums were soon affected by mercury; the purging continued: chalk mixture with opium. no benefit He died on the 22nd of July, and was *opened* soon after death.—The lungs adhered to the pleura on both sides; much coagulated lymph upon the surface; the substance of a deadly pale colour,—not ulcerated. The heart was large in proportion—loaded with something adventitious, not unlike fat; there was much water in the pericardium; the omentum was loaded with a fat-like substance; there was much mucus on the internal surface of the stomach, the coats of which were thickened and of changed structure. The large intestines were loaded with fat,—the coats thickened and of a milky white colour; the small intestines appeared as if they had been bleached. The mesentery was thickened, the glands enlarged: the liver appeared as if it had been boiled—it was hard at the edges: the gall bladder was nearly empty,—the little bile, which it contained, pale in colour:—the spleen adhered to the peritoneum.

*Guiana.*

An extensive tract of country on the great continent of America, bounded by the ocean on the north, the Oronoko river on the west, the Amazon on the east, and Black river on the south, is distinguished, in the maps, by the name of Guiana. Circumscribed by a boundary of water—salt or fresh, it is intersected immediately by numerous large rivers, and by many creeks equal in magnitude to the rivers of most other countries. The surface is various, viz. rocky mountain, sandy plain and muddy swamp: the soil is fertile,—literally hot bed for animal and vegetable life.

The coast of Guiana, which runs south-east and north-west, is generally low, the greater part of it below the level of the sea at high tide. It is covered with wood to the water's edge: the soil is mud on a bed of shell, mixture of sand with shell, blue clay or turf. The ascent from the coast to the interior is so gradual in most places as to be scarcely perceptible. Rains are frequent: they fill the earth with moisture which stagnates, or is enticed to move by artificial declivity, viz. canals and drains, or by fluctuating declivity from retiring tides.

Guiana is, as already observed, bounded by the Amazon river on the east, by the Oronoko on the west. The tract is of great extent, the sovereignty of it usurped by different European powers. The part of it which lies near the Oronoko, extending to Black river on the west, to Parima on the south,

and to Poumaran on the east, is claimed by the Spaniards. The Poumaran limits the dominion of the Dutch on the west; the Marawina on the east. The French claim from the Marawina to the Amazon at Cap du Nord, comprehending the district known by the name of Cayenne. The Portuguese possess the banks of the Amazon as far back as Black river.

The whole of the coast, which lies between the Amazon and the Oronoko rivers, is intersected by rivers or creeks of a more direct or more tortuous course; the banks of which were, here and there, occupied by tribes of Indians when Europeans first visited the country. The Indians, disturbed by the invaders, have retired backwards; or, they have been destroyed by one or other of the contingencies to which the lot of man is liable, so that they are now seen only in small numbers. Several of the rivers are of great breadth; the boundary rivers—Amazon and Oronoko, are among the broadest in the world. The Issequibo, Demerara, Berbice, Copenam, Surinam, Marawina and Ogapoea are inferior; they notwithstanding rank high in the second class of rivers, whether the length of the course be considered, or the weight of the waters which fill their channels. The stream is rapid in most of them; the eddies numerous; the currents irregular.

The exhalation, which arises from the flat coast of Guiana, may be reasonably supposed to communicate an abundant proportion of moisture to the

atmosphere ; for, besides the surfaces of pure water in rivers and creeks, the uncultivated parts of the country are generally inundated to such extent in the season of rain as to present to the eye a continued sheet of water. As the ground is level, the water on the surface necessarily stagnates, unless where it is enticed to move by descents made artificially, or impelled to move by accession of quantity from the clouds.

The coast of Guiana, which runs south east and north west, extends from the eighth degree of north latitude to the equator. The latitude is low : the heat does not rise in proportion to the lowness of the latitude, being in reality less oppressive at the immediate sea coast than it is in most of the Caribbean islands. The winds, which blow from the interior, are often cool ; and, as they blow over a wide expanded surface of verdant woods, the impulse is equal, not irregular, and not injurious to health. The sea breezes are strong, rarely furious ; the impression is moist, soft and agreeable to the feeling.

The seasons in Guiana are distinguished by the appellation of greater and lesser wet, greater and lesser dry. The great or long dry season begins in July, and continues until November : the heat is sometimes high during this period, vegetation suspended in defect of moisture. The short wet season begins in December, and continues until February. The short dry season extends from February to April : the great rains then begin and

continue for three months. The quantity which falls during the long wet season is so superabounding as to inundate every part of the flat country which is not secured from inundation by artificial means. The heat is often high during this period; when the breezes fail it is oppressive. The daily range of the thermometer is not of great extent, it seldom exceeds five degrees at the open sea coast; it is sometimes ten or twelve on the banks of creeks which extend into the interior.

The sea coast of Guiana, while cool comparatively, is also comparatively healthy. The febrile diseases, though not fewer in number, are less formidable in appearance, and less rapidly fatal than they are in the majority of the islands within the tropics. This applies only to the sea coast; the Savannas in the interior are immoderately hot; and, according to report, they are not healthy. The interior military stations, viz. the Acquesgnsche on Berbice river, different posts on the Marawina, and several points in the boundary line of Surinam are also unhealthy, so unhealthy as scarcely to be tenable by Europeans. The form of disease is usually remittent—violent and rapidly fatal; the character of the action which it assumes often gangrenous.

Fever of the intermittent type, viz. tertian—single or compound, may be considered as the base of the endemic disease of the coast of Guiana. It rises and falls in frequency of occurrence and in intensity of symptoms according to obvious changes of season

and weather. It is one disease ; at least it proceeds from one radical cause : it is diversified considerably in the form of action by a variety of adventitious circumstances. It is sometimes mild and easily cured ; sometimes violent and untractable to ordinary means of remedy ; sometimes sporadic ; sometimes epidemic without visible cause—and fatal, as left to itself, in extraordinary proportion. It is usually more regular in form, and more easily arrested at the open and level sea coast than in the interior of the country, near the banks of rivers, creeks and lagoons. It is usually of the single tertian type in what are deemed the healthier months of the year, especially among persons whose constitutions have been assimilated to the climate by long residence. The ardent continued form, known by the name of yellow fever, is rare, unless in the dry weather among persons recently imported from Europe. The gastric or bilious remittent occurs frequently :—it is epidemic on some occasions, and considerably fatal. The dysenteric form is sometimes epidemic, sometimes scarcely known. The ulcerative or gangrenous sore on the legs occurs on some occasions to great extent ; sometimes it has no place in the hospital list :—the cause of such difference is not obvious.

*Dutch Guiana.*

Dutch Guiana was added to the intertropical possessions of Great Britain in the course of the

war 1793. It was restored at the peace of Amiens. It was again seized at the commencement of the war 1803. Dutch Guiana is bounded by the Poumaran river on the west, by the Marawina on the east. The line of coast, which is of great extent, is divided into three colonial governments, viz. Issequibo and Demerara under the management of the West-India company of Zealand ; Berbice, under the direction of a particular company of merchants ; Surinam, a mixed property, partly belonging to the West-India company, to the city of Amsterdam, and to the house of Aarson of Sommels dyke : the whole was under the protection and acknowledged sovereignty of the late states general of the united Netherlands.

The town of Stabrook, now George town on the east bank of Demerara river, near to its mouth, is the seat of Government for Demerara and Issequibo ; New Amsterdam, on the east bank of Berbice river, and near to the mouth of the river, for the colony of Berbice ; Paramaribo, on the west bank of Surinam river, at the distance of fifteen miles from the coast, for the colony of Surinam. The town of Paramaribo, which occupies a bank of sand and shell somewhat elevated above the bed of the river, is a town of magnificent appearance, comparatively with towns in the tropical colonies. The streets are spacious and regular ; and, from the nature of the shell reef on which they are laid, they are dry and clean immediately after the heaviest rains : the air is moreover refreshed by perfume

from rows of orange trees which line the principal streets. The towns of Stabrook and New Amsterdam, as laid upon a bed of mud or clay, are less agreeable to the inhabitant than Paramaribo: they are rendered habitable, and not unpleasant by the industry of the Dutch.

The persons who first visited the coasts of Guiana were adventurers thirsting after gold. As such, they were not interested in the qualities of the soil. The gold mines were sought for in vain: provisions failed; and necessity, the best friend of the human race, obliged the destitute to colonise and cultivate the soil for the sake of subsistence. The English, who had as much of the adventurous and free-booting spirit as any people of the time, made frequent visits to Guiana in the sixteenth century: they even attempted to establish a colony in it in the reign of Charles the second. The English and French were prior to the Dutch in their visits to Guiana; the Dutch, as the first who adopted a mode of culture suitable to the circumstances of the country, may be justly regarded as the first colonists.

A body of jews were banished from Spain and Portugal, by royal edict, while the Guiana settlements were in their infancy. The act of banishment, detestable in itself as an act of bigotted tyranny, was a cause of prosperity to the colonies in the new world. The expelled jews were rich, industrious and comparatively intelligent; they were moreover sober, abstemious, even moral be-

yond the adventurers who sacrilegiously assumed the christian name. From Spain and Portugal the jews went to Brazil, from Brazil to Cayenne, and from Cayenne, continuing the route westward, they presented themselves at Surinam; where, being well received by the then lords of the soil, they were permitted to form a settlement for their scattered race. The jews, as more abstemious, and apparently as better disciplined by moral institution than the other settlers in this colony, had better health; and, as more efficient from better health, they were found to be energetic defenders of the colony under insurrections of slaves and other internal disturbances.

The early planters, particularly the Dutch, fixed their habitations on the banks of rivers and creeks; they left a belt of wood at the sea coast, in the view of protecting the settlement against the invasion of free-booters. The English, the present lords of Demerara and Berbice, have, contrary to the example of the Dutch, chosen the sea coast for the scene of their agricultural operations. They do not fear invasion from sea; and, in correspondence with their view of convenient culture, they have divided a border at the coast, not two miles in depth, into lots of different magnitude, drained, dressed, and planted continuously, with sugar-cane, cotton, and coffee, from Demerara river to the Correntin. The style of culture enlivens the scene for the satisfaction of the eye; the effect of the culture diminishes the natural insalubrity of the cli-

mate, and the colonist, who lives on the sea coast, retains, if European, the vigour and activity of the European for a long course of years ; on the contrary, those who live upon the banks of fresh water rivers or interior creeks, soon become feeble and pale ; they are in fact valetudinary and short-lived. The jews are abstemious ; the Dutch feed grossly ; the English adhere to the custom of their country, but indulge less in conviviality at the present than they did in times not long past.

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### *Divisions of Dutch Guiana.*

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#### *Surinam.*

The coast of Surinam runs east and west. It is bounded by the Correntin river on the west, by the Marawina on the east, and covered with woods to the water's edge, with the exception of two or three establishments recently made. The settlements of planters were formed in early times on the margins of creeks and rivers only. The borders of the Seramica and Commenwina rivers, the Wanica and Motica creeks, present a regular series of them. The land near the sea is perfectly level ; and, with the exception of occasional reefs or banks of shell, it is under water at the spring tides, which rise to the height of ten or twelve

feet on most occasions, sometimes to more. The soil, thus liable to inundation in its natural state, is rendered habitable by means of dikes, canals, ditches and drains; and, while thus rendered habitable, it is also rendered productive of the various articles of provision which are necessary for the sustenance of the inhabitant, or which, exported to a foreign market, fill the coffers of the planter with wealth.

The habitations of the Dutch planter are, for the most part, convenient; sometimes, magnificent. The environ is usually decorated in Dutch taste with pleasure-houses, canals, bridges, orange-groves, and shell covered walks between the principal places of resort.—The latitude of Surinam is low, viz. six degrees of north latitude. The heat is not high in proportion to the lowness of the latitude: it is rarely oppressive when it rises high, even so high as ninety, which it does not unfrequently at Paramaribo. The vigor of European health is little impaired comparatively by the influence of climate in the sea-coast parts of the colony of Surinam; and long residence is so little irksome, that the British military, when removed from it in the routine of duty, frequently express regret when they receive the order to embark.

The Dutch adventurers, who migrated to Surinam, carried with them their national industry and their national habits of life, which they applied to the case before them; and converted, by judicious culture, a country which was literally swamp and

covered with woods, into a productive, not an unpleasant, and comparatively a healthy abode for the European settler. The cultivated parts of Surinam are not unhealthy, especially near the sea and within the influence of the salt water tides ; on the banks of fresh water rivers, creeks and lagoons in the interior, or on broken and irregular ground contiguous to stagnant water, or slow moving streams any where, sickness is great, often of a mortal character.

The military barrack at Paramaribo, the headquarters in the colony, stands within the cincture of the dismantled Fort Zealand. It is a capacious building of three stories ; the floor raised from the ground, but not ventilated underneath. The interior is spacious and cheerful as a dwelling for military :—it is not overcrowded.

Fort Amsterdam occupies an angle at the junction of the Surinam and Commewina rivers. It is considered as the strong hold in the colony ; but its circuit is so extensive that it could not be adequately manned by the whole of the British force that are at present in this settlement. The work is in good repair ; the ditches are clean ; the ramparts perfect ; the interior in good order ; the barracks not bad in form of construction, and not half filled according to barrack regulation.

Brandwaght, a military post on the east side of the creek Motica, within five or six hundred paces of the sea, is the most eastern station on the coast occupied by British troops. The sides of the creek

are cleared of woods, and cultivated without interval of waste between the Commenwina river and the sea. The position at Brandwaght is level : the environ, notwithstanding artificial embankments, is often overflowed by the sea at spring tides. The military work, which is square in its form, has bastions at the angles ; the barracks are in the centre of the square. The ditch is filled to the brim by mud ; and the parapet wall, which had been raised on the simple soil, without piles, has sunk to within one foot of the level surface : the guns are thus exposed, and the defences are in a manner annihilated. The barrack is weather-proof, capable of containing three hundred men ; the detachment does not exceed thirty,—with a few persons extra as convalescent.

Croningen, a military post on the Seramica river, is held by a detachment of twenty soldiers from the head quarters of the colony. The fort is a regular work, calculated for three hundred men or more, the situation is comparatively pleasant : the detachment has excellent barrack accommodation.

The hospital for sick at Paramaribo is the only one in the colony. It is not considered as a model in point of construction ; but it has more conveniences and more comforts of accommodation for the sick than most others in the British colonies. The building is about ninety feet long and thirty wide. It consists of three wooden stories for the reception of sick, erected upon a story of brick, eight feet in height. The access to the sick wards is by a broad and easy staircase,—direct into a

gallery of ten or eleven feet wide which is added to the north side of the lower ward ; the access to the upper wards is by interior staircases. The wards for the reception of sick are wide, not lofty in proportion to the width ; and are well ventilated. The upper ward, as near the roof, is necessarily hot while the sun is vertical : it is occupied by convalescents, or persons slightly indisposed, who have the power of removing from it, when they are so inclined, to repose upon benches which have been placed, for the purpose of repose, under the shade of lofty and wide spreading trees which are planted in the hospital enclosure. The hospital establishment at Paramaribo appears to have been well designed. It was complete in its exterior appendages, and regulated in its economy by such provisions and cares as might be expected to be found in the institutions of the Dutch. The house remains, and receives the sick of the troops : the economical system of the Dutch is annulled, the hospital dependencies dilapidated, or converted to other purposes than those originally intended.

The same general forms of disease present themselves in the colony of Surinam as in other of the intertropical possessions. Periodic fever—intermittent or remittent, is properly speaking endemic : it is frequent or rare at particular seasons of the common year ; sometimes so frequent at particular but uncertain periods, as to obtain the name of epidemic : the dysenteric is not unusual as original ; it is common as secondary, viz. degenerated inter-

mittent or remittent : the ulcerative or sore leg prevails on some occasions to great extent, particularly at Fort Amsterdam : it is always observable in the sick return ; sometimes conspicuous. Dry belly-ache which, at the present time at least, occurs only rarely in the Windward and Leeward islands, is common in Surinam, especially among the planters who live near the inland creeks. The circumstances under which this form of disease appears, and the course which it pursues, give reason to believe that it is in reality a febrile disease ; that is, a modified form of action arising from the impressions of a common febrile cause. The concentrated continued fever with black vomiting, commonly called yellow fever, is comparatively rare in Surinam ; yellowness, even of the deeper shades, is not unusual in the gastric or bilious remittent.—The Table, No. 1, in the annexed return, gives a view of the relative salubrity of this colony with other islands or colonies in the West-Indies.

### *Berbice and Demerara.*

One part of Dutch Guiana resembles another in the natural state ; the appearance is modified or changed by culture. The colonists fixed their habitations in the colony of Surinam, as already observed, on creeks, or rivers at some distance from the sea ; the sea coast has been chosen for the scene of agricultural activity in the colonies of Berbice and Demerara. The land at the sea coast

is divided, in correspondence with this view, into lots: preparatory of culture, it is drained or intersected with canals or ditches. The immediate sea coast is principally planted with cotton; the plantain walks and pasture grounds run backwards into the interior. The soil at the sea coast is generally blue clay, occasionally interspersed with sand or shell banks, interiorly it is of a turf nature.

The *coup d'œil* of the coast of Berbice and Demerara, notwithstanding uniformity and low level, is upon the whole pleasing. The cotton plantations are nearly similar in appearance: the scenery, though neither varied nor grand, gives satisfaction and even pleasure to the eye, when viewed as a creation of human industry arising in a waste of swamps and woods. The temperature of the sea coast is moderate, ordinarily eighty or eighty-two; rarely higher than eighty-six of Fahrenheit's scale. Rains are frequent and heavy, but less impetuous than in the mountainous islands of tropical latitudes. The sea breezes set in at regular periods: they are ordinarily strong, generally cool and refreshing. The land winds are soft and cool—not dry and parching as winds usually are that blow over arid plains, nor chill and piercing as the blasts which descend directly from interior mountains through deep ravines and hollow ways. The generative power of nature is strong in Guiana: the woods and waters teem with animal life. But, though the climate of Guiana be singularly congenial to the multiplication of common animal life,

the native human race, which is now banished from the coast, does not appear to have been prolific while it possessed it. The cause is obscure : it could not be said to be want of food, if there was industry to seek for it. The African thrives in Guiana: the male is tall, straight and athletic, sleek and generally in good bodily condition. Provisions are abundant,—often in profusion. The sea coast is not unhealthy, either to Africans or Europeans. The slave appears to be satisfied, and to perform his task of labour with cheerfulness; the master might, it is presumed, be happy if the ravenous desire of accumulating riches by all chances of speculation would permit him to be so.

### *Berbice.*

Fort St. André, the military station at Berbice, a small but regular work on the east bank of Berbice river, near its mouth, commands the channel on the east of Crab island. The guard house and the quarter for the commandant of the troops are within the fort ; the soldier's barrack, the officer's barrack and the hospital are without—on what may be termed the glacis. The soldier's barrack consists of two stories; the lower story is raised from the ground by two steps, but not ventilated underneath : it is less healthy than the upper. The barrack is not crowded at present ; the interior order is not good. The surface of the barrack yard, that is, the space connected with the sol-

dier's barrack, the officer's barrack and the hospital, is divided into small squares by trenches and surface drains: it is notwithstanding a bog in wet weather. The ground which lies windward of it is waste and neglected; the ditches and drains choked with mud; the surface overrun with weeds and frequently covered with water.

The proportion of the sick to the effective has been uncommonly high, for some time past (November, 1812) in the detachment of troops that is stationed at Fort St. André. Every officer has been ill; and there are not more than ten, out of one hundred and eighty rank and file, who have not been in the hospital within the last four months,—some of them a second, and even a third time: the mortality has, as yet, been insignificant. The environ of the barrack is foul; part of it is frequently inundated: the flux and reflux of the tide, producing a fluctuating declivity, entice the moisture of the soil into gentle motion: the sea breeze rarely fails; hence ventilation in the interior of the barracks is rarely interrupted.

The house, appropriated to the reception of the sick, is a small building of two stories, or rather of one story and a half. The lower story, raised from the ground only by one step, has a brick paved gallery in front and rear: the interior floor is board, resting on a damp bed, consequently not suitable for the reception of sick. The upper story is dry and presumptively less unwholesome, but, as it is low, being in fact only half a story,

it is insufferably hot in the hotter hours of the day.——The plan of this hospital was so defective in its foundations, that it was not deemed possible to improve it by any means that could be suggested. An hospital, properly constructed and properly equipped, is essential to the success of medical practice. The success of medical practice, though not estimated high in state calculations, is not without value. When accounts are correctly balanced it appears to affect the expenditure of public money, even to command the results in war ; it was therefore recommended on this occasion that an hospital, suitable for the purposes of the station, should be erected near Fort St. André, viz. on the king's ground beyond the exterior ditch.—A house of hard wood, ninety feet in length and twenty-four in breadth, with jalousied galleries on all sides ten feet wide, might be erected upon brick pillars eight feet high, according to the rough estimate of planters, for the sum of one thousand pounds sterling ; and, according to the same estimate, it might be computed to last one hundred years without repair, except repair of roof. A house of the dimensions specified, may be considered as equal to the accommodation of the sick of the garrison of Fort St. André in ordinary circumstances ; under the occurrence of epidemic sickness, adequate relief from the pressure would be found in the jalousied gallery. The wooden part of the building, which is to be erected upon pillars, is intended for the reception of the sick ; the space, or part of the

space underneath may be floored with brick or pan-tile, divided into apartments, and set apart for stores, surgery, receiving and bathing room, &c.

The salubrity or insalubrity of the coast of Guiana is intimately connected with the condition of the exterior surface. The environ of Fort St. André was, at this time, waste and neglected; it was therefore suggested, in the report of inspection, that effective measures should be adopted for its culture and improvement. The trenches and surface drains in the barrack enclosure were numerous and foul, so as to harbour vermin and retain moisture tending to decomposition in the existing circumstances of the case. It was therefore recommended, in expectation of thereby diminishing the evil, that a proportion of the surface drains should be filled up and rammed; that the squares should be large in their dimensions, raised in the middle by soil taken from the trench, and consolidated by a coating of sand or shell brought from a distance; the whole so inclined, and kept in such order of dressing that water might have a current to the trench, and from the trench to the tide canal. It was farther suggested that the whole of the prepared ground should be planted with Bahama grass, a plant which creeps upon the ground and more effectually than any other chokes the growth of luxuriant weeds.

#### *Demerara.*

Demerara river appears to be about two miles in breadth at the entrance within the bar. A fort is

erected upon its south-east bank, with a view to command the channel and road for shipping. The town of Stabrook, now George town, extends from the fort upwards—for one mile or more. The site, as perfectly level, was often inundated in its natural state : it is now intersected by tide canals, ditches and trenches, so as to be dry and habitable. The streets, with their bridges of communication, are well laid out, and they are kept in good order. The town is clean and proper in its exterior as Dutch towns usually are ; it is not unpleasant as a residence, and it does not appear to be unhealthy. The fort, and the quarter destined for the military commanding officer have, by position, the advantage of a strong and direct breeze from the sea ; they do not however appear to have any decided superiority over other parts of the town in so far as regards salubrity. The military barrack, which stands about a quarter of a mile from the fort, is a wooden building of two stories. It was erected originally on brick pillars ; but the pillars were of so little elevation that they soon disappeared, as pressed through the mud by the weight of the superstructure ; consequently the floor came in contact with the swampy surface of the earth, and as such was damp and dirty. An attempt was made to raise the floor : it was in fact raised by one foot or more, and brick drains were formed exteriorly to carry off the falling rain. What was done was an improvement: the lower floor is still objec-

tionable, as a military quarter, on account of its dampness.

The ground which may be called barrack ground at this station, as connected with the quarters of troops and various military offices, is of considerable extent. It is enclosed by canals and ditches, and intersected, at various distances, by trenches and surface drains. The ditches and drains are now and then cleared out; the mud which is drawn from them is heaped upon the bank in the manner of a dike; it thus, by rendering the enclosed ground hollow in the centre, forms a receptacle for rain water; and, as such, the centre of the square is inundated in the wet season; it is damp at all times. The ditch on the south, or back part of the barrack is at present (1812) choked with mud, its banks covered by hog sties.

The condition of the barracks and the adjacent grounds is not in good order: it admits of improvement, in fact requires alteration for the convenience of the troops, as well as for the preservation of their health. It is not difficult to say what these improvements ought to be; it is not easy to prevail on those who have power to give effect to what is recommended, the reasons and the economy of the measure not perhaps being fully comprehended by them. It is necessary in the first place that the barrack be raised, on pillars of brick, to the height of seven or eight feet from the ground; that the ground be paved with brick, or laid with pan-tile, the basement story between the

pillars reserved as a place for cleaning arms, or for drill in wet weather ; that the ditch on the south part of the building be formed into a tide canal with a sluice ; that a proportion of the trenches and surface drains, which are numerous and usually choked with grass and weeds, be filled up and rammed ; that the mud which is taken from the ditches, by which the ground is divided into squares, be so disposed at the central parts as to give declivity for the descent of moisture ; that the surface of the square be rolled with a cylinder, the soil consolidated by sand, shell or broken brick ; and, that the growth of weeds and common grass be supplanted by a covering of Bahama grass. The barrack ground is of considerable extent : it is capable of being made fit for exercising ground at most times ; it will be preserved from inundation, even in the season of heavy rains, by a proper execution of the means here suggested.

The house, allotted to the reception of the sick troops at Demerara, stands in an enclosure which is about three hundred paces in length, and one hundred and fifty in breadth. It is bounded on the south by an open tide canal ; on the other parts by paling or the walls of houses, so as to have no communication with the exterior except through the gate. It was a dwelling-house originally ; and, having been selected for a military hospital, it was altered, and so improved, under the direction of the chief medical officer of the station, as to be comparatively a good and commodious one. Some

improvement was made in itself and its appendages after the inspection in the year 1812: the sick are now comfortably lodged, even well accommodated. The house consists of two wooden stories, with a garret; it is erected upon pillars seven feet in height. Jalousied galleries have been added to the first and second story; the exterior appendages are well arranged for convenience and use.

#### CASE I.

Surinam.—Paramaribo, *August 14th, 1806.*—Robert Mackay, sixty-fourth regiment of foot, admitted into hospital in the evening. He complained of violent pain of the head and back, nausea, impatience of pressure at the præcordia: the pulse one hundred and five; the skin hot; the body costive; the tongue foul: purging pills and tepid drinks. *15th*,—two motions in the night; the fever continues; the pulse one hundred strokes in the minute; the skin hot; the tongue foul. Evening,—several evacuations by stool in the course of the day; the symptoms less violent; the head-ache still severe: blister to the head: tepid bath. *16th*,—fever violent; pulse strong and frequent; skin hot and dry; tongue foul; body open: effervescing draught every hour: cold bath: anodyne draught at bed-time. *17th*,—the symptoms much abated; head-ache continues; the eyes red; the face flushed; the pulse regular,—febrile in frequency: calomel and James' powder in small doses every hour. Evening,—the febrile symptoms continue; the pulse quick and strong; the skin hot; the tongue white; the body open: tepid baths and tepid drinks. *18th*,—febrile symptoms moderate; the pulse strong; the skin hot; the tongue white; the body open: cold bath: infusion of bark every two hours. Evening,—tepid bath and anodyne draught. *19th*,—febrile symptoms subsided; pulse regular; skin natural; tongue foul; body costive: purging mixture. Evening,—the fever returned in the afternoon; the pulse strong; the skin

hot; the body open; the tongue dry: tepid bath and tepid drinks. 20th,—the fever subsided: saline draught every other hour. Evening,—tepid bath. 21st,—fever high; the pulse one hundred and twenty strokes in the minute; the skin hot; the body costive: camphorated mixture with capsicum: purging clyster: cold bath. Evening,—fever abated: tepid bath: tepid drinks. 22nd,—no fever: infusion of bark every other hour. Evening,—the fever returned; the pulse quick and strong; the skin hot; vomiting has supervened: blister to the stomach: cold bath. 23rd,—fever continued all night; pulse one hundred and ten; skin hot; tongue black and furred; body open; spirits distressed—debility; camphorated mixture with capsicum every other hour: infusion of bark: purging clyster. 24th,—no material alteration: medicines continued. Evening,—the febrile symptoms less violent; the skin still hot; the tongue black and furred; thirst urgent: tepid bath: anodyne draught at bed-time. 25th,—fever much abated; the pulse ninety-five in the minute; the skin cold and clammy; the tongue dry; the thirst urgent; the body open: camphorated mixture and capsicum: infusion of bark with vitriolic acid. Evening,—the fever gone. 26th,—no return of fever; the pulse regular; the skin moist; the tongue dry; the thirst urgent; the body open.—This patient recovered: the time of discharge from hospital is not marked.

## CASE II.

Surinam.—Paramaribo, *October 13th, 1814.*—Simmons, sixtieth regiment, aged twenty-one years, habit full, temperament sanguine, attacked to-day with a severe paroxysm of fever. The pulse is quick and hard; the skin extremely hot and dry; the abdomen hard and tense; the countenance much flushed; the eye suffused with red; speechless and insensible. Bled to the amount of sixty ounces: cold bath: blister to the head: purging pills—three every hour until stools be procured. 14th,—the pills operated freely. Simmons is now sensible, and capable of uttering speech; the abdomen is still tense:

purging mixture. 15th,—much better; quite sensible: opiate at bed time. 16th,—no complaint, except of the pain of the blisters. 17th,—desire of food: no complaint. 19th,—discharged to duty.

### CASE III.

Berbice, *October 14th, 1814.*—Charles Hepolet, sixtieth regiment of foot, aged twenty-nine, attacked with a paroxysm of fever at eleven o'clock A. M. yesterday, and brought to the hospital in the evening: an emetic immediately: purging pills, when the operation of the emetic was finished. No stool: solution of salts: no fever at present. The salts did not operate; they were repeated, with a drachm of Peruvian bark every hour. 15th,—several stools; the head aches; signs of the return of fever: tepid bath: saline draught every other hour. Evening,—the paroxysm has been severe, accompanied with head-ache and bilious vomiting: emetic. 16th,—many stools; bilious matter ejected by vomit; the stomach retentive at present; skin relaxed; head-ache severe; pulse hard: tepid bath: calomel and antimonial powder: Peruvian bark every second hour. Evening,—head-ache continues; the pulse quick and hard; the skin hot and dry; some perspiration after the bath; three stools. Bled to the amount of sixteen ounces: tepid bath and diaphoretic draught. 17th,—frequent vomiting of dark coloured matter; skin very yellow—and dry withal; the pulse hard and frequent: tepid bath: friction of the whole of the body with mercurial ointment and warm oil; a pill, composed of calomel, ammonia and camphire at bed time—after the tepid bath: an effervescing draught every other hour. Noon,—no perspiration; the skin very hot and dry; the tongue foul. He does not answer questions that are put to him; pulse one hundred and thirty: effervescing draughts continued. Evening,—no remission; skin still dry and hot: affusion of cold water on the surface of the body. 18th,—complete remission after the cold affusion; perspiration copious; the skin now cool and moist; answers the questions that are put to him; does not complain of pain of the head;

several stools; pulse one hundred and ten—weak; the blister has risen properly; no vomiting. Bark at regular intervals since five in the morning; three gills of wine ordered for the day. Noon,—return of vomiting. Evening,—paroxysm commenced at five P. M. The skin hot and dry; vomiting frequent; no evacuation by stool—not sensible. Calomel and opium: cold affusion: half an ounce of brandy every other hour. 19th,—insensible; pulse very frequent; profuse perspiration; respiration laborious. Died at two o'clock, P. M.  
*Dissection.*—A quantity of serum in the ventricles and at the base of the brain; the spleen increased in size; the stomach and gall bladder contained a quantity of dark coloured bile;—there were marks of inflammation on the internal coat of the stomach.

## CASE IV.

Demerara, *July 19th, 1814.*—Moskau, sixtieth regiment of foot, aged thirty-eight years, thin in habit, was attacked with symptoms of remittent fever on the 17th, and admitted into hospital to-day. He had, at that time, considerable heat of skin and head-ache, with a pulse beating at the rate of one hundred and ten in the minute; the tongue foul and dry; much pain in the chest, with some difficulty in breathing. Bled to the extent of forty ounces; the pain in the chest removed; heat of the skin and hardness of the pulse diminished. Solution of salts;—several stools in consequence. 20th,—complete remission: bark. 24th,—paroxysm of fever of several hours continuance;—bark in remission. The fever returned by paroxysms every day until the 2nd of *August*, when it ceased. The progress in recovery, under bark and wine, seemed to be prosperous until the 12th, when a pain attacked the chest, for the removal of which a blister was applied. 14th,—severe pain in the bowels, with purging and tenesmus; stools slimy and bilious: solution of salts: an opiate at night. 15th,—rather better; purging still frequent; the pulse small and quick; the skin dry. Ipecacuanha in small doses: the skin softer; the

pains less urgent towards evening. 20<sup>th</sup>—no tenesmus; stools frequent—scanty; castor oil. 21<sup>st</sup>,—tincture of kina with an opiate at night:—occasional pains in the chest: blister: body reduced in flesh: starch clysters: wine. 28<sup>th</sup>,—the purging continues.—Moskau lost ground every day until the 12<sup>th</sup> of September, when he died. *Dissection.*—Water in the cavity of the thorax; the pericardium distended with fluid; water in the cavity of the abdomen; the liver increased in size; the internal coats of the colon much ulcerated.

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### *Island of Jamaica.*

The island of Jamaica, one hundred and fifty miles in length, and from thirty to forty in breadth, lies in the eighteenth degree of north latitude. The island is of an irregular surface; the interior is mountainous,—some of the mountains of great elevation. The ascent from the coast to the central ridge is comparatively gradual on the north side, which is varied by hill and dale of various extent and form. The descent, from the central ridge to the coast on the south, is comparatively abrupt—often precipitous. The plains or savannas on the south are numerous and expansive. Besides sea-coast plains or savannas, there is a plain in the centre of the island on an elevated base, viz. St. Thomas in the Vale, of considerable extent.—The temperature of the air is moderate in most places; agreeable in many, oppressive only in few. The stations occupied by the troops, as numerous, cannot all be supposed to possess the same healthy

character: I here notice the outline of the differences only in a very cursory manner.

The plain of Ligueana, an extensive savanna on the south side of the island, about thirty miles from the eastern extremity, is conspicuous in the medical topography of Jamaica. The town of Kingston, which is the great mercantile depot of the island, including the town of Spanish-town, or St. Jago de la Vega, which is the seat of Government, both being within its limits, stands at the east side of the plain, near the inland extremity of an arm of the sea, which runs into the plain in a northerly direction. This arm, which is five or six miles in length, affords a secure harbour for the shipping at Kingston. It is formed by the projection of a tongue of low land, viz. a bank of shingle, which, taking off from the plain on the north, runs into the bay in a southerly direction, terminating obtusely in such manner as to leave a passage into the sleeve which leads to the harbour, of one mile or more in breadth. The point, which terminates the projection, is covered with military works for the defence of the passage, barracks for troops, arsenals, and hospitals for the sick of the army and navy, with habitations for a multitude of followers of the army and navy establishments. The site is perfectly level;—it is not swampy, but it is saturated with moisture in the season of the heavy rains: it is not considered as unhealthy. The town of Port Royal, as occupying the tongue of land which runs into the bay, is on the east of the channel

which leads to the town ; an extensive military work, Fort Augusta, is erected on the west, at the point best calculated to command the passage to Kingston. It stands upon the level beach, at the margin of an alluvial plain, and eastward of an offensive swamp. It is fully exposed to the influence of the sea breeze, which is refreshing and generally deemed salutary to the European constitution. Fort Augusta, though so near to a swampy plain of pestiferous exhalation, does not appear, upon the whole, to have been an unhealthy military quarter ;—a fact only to be explained by the supposition that the exhalation, inasmuch as the more obnoxious parts of the swamps are covered with woods—mostly tall trees, attains a higher level in the atmosphere, before it begins to move, than the actual site of Fort Augusta, which occupies the level beach. Kingston, as well as a depot of merchandise, is a station for troops. The town is extensive ; the houses comparatively good ; the soil alluvial ; the sea margin such as may be called swamp. A part of the military, who garrison the island, are quartered in the town ; the greater number are stationed at Up-park, which is about one mile interior, on a comparatively dry part of the plain. Spanish town lies in a westerly direction from Kingston, in what may be considered to be the plain of Ligueana, near the banks of a considerable stream—the Cabretto river. The site is somewhat more elevated than that of Kingston ; a great part of the plain eastward is absolute swamp. The injurious exha-

lations which arise from it would appear to have attained a high station in the air before they arrive at the line of Spanish town, or to be intercepted and changed by the lofty and wide spreading trees which are scattered around the place, for Spanish town does not appear to be peculiarly unhealthy.—It is remarked that habitations on exposed eminences in the vicinity, are less healthy than the houses of the town itself. Rock Fort, a military post, established at the entrance into the plain of Ligueana on the north-east, with a view to bar the passage of hostile force, deserves notice in this place from its singular insalubrity. It was deemed to be of importance to the safety of the town, and it was maintained at one time, without visible cause of necessity, at great expence of military life.—The sacrifice, according to report, resulted from a contest of authority between the Governor and the General in command of the troops. Fort Nugent, a station eastward of Rock Fort, a few hundred yards interior of the sea coast, is erected on an eminence among broken grounds. It is less unhealthy to the garrison than Rock Fort, but much more unhealthy than the quarters in the plain of Ligueana. Stony Hill, a considerable military station about twelve miles interior from the town of Kingston, is here considered as connected with the garrison of head quarters. The barracks at Stony Hill occupy different ridge eminences in the niche of a chain of lofty mountain, through which a road of communication has been made to

the north side of the island. The position, as actually in a niche between lofty mountains, is exposed to currents of wind which sweep among the mountains; and even to the impulse of exhalations conveyed by other winds from the swampy shores of the plain of Ligueana, which lies on the east and south of it. Intermittent and remittent fever is not of rare occurrence at this station; dysentery or diarrhea is frequent; ulcer on the legs is troublesome; sometimes epidemic,—and destructive.

The barracks and hospitals are good in the dependencies of head quarters in the island of Jamaica, as compared with barracks and hospitals in the Windward and Leeward island station. The barrack at Kingston is not bad in itself, abstracted from size and site: the site is even as good as any within the precinct of the town. The hospital is, on the contrary, bad;—so ill contrived that it is difficult to say in what manner it could be improved so as to be rendered a fit receptacle for sick. The new barracks at Up-park are erected upon pillars about eight feet in height. They are excellent in themselves: had they been of a smaller size with jalousied galleries at the ends and north side, they might be regarded as a model for military quarters in a tropical climate. The hospitals are upon the whole good: some things were suggested for their improvement at the author's inspection in the year 1815. The suggestions were attended to; and the hospitals at Up-park are now understood to be among the most comfortable, if not actually the

most comfortable in the British colonies. The barracks at Spanish town are not bad comparatively: they are capable of improvement;—it is not known how far the improvements suggested in 1815 have been attended to. The barracks at Fort Augusta are comparatively good; those at Port Royal are in good repair. The hospital is small; the apartments low roofed and ill ventilated. Some improvements were suggested in 1815: it is not known to the author whether or not they were executed. The barracks at Rock Fort are much dilapidated; and, as the importance of the post is not now rated so high as it has been, the garrison is reduced to a non-commissioned officer's command. This is something, I am ready to confess, in the balance of casualty, but it is not enough: I may be allowed to add that, if it be deemed expedient to maintain the post in any form, it is not more than justice, if the garrison be reduced to two persons, that quarters be provided for them which, instead of concentrating the causes of sickness, as seems to be the case at present, may tend to protect them from injury, in so far as it is possible to furnish them protection by human contrivances. Under this impression, it was recommended that, if it should be deemed expedient to build a barrack at Rock Fort, the front should be towards the sea, the back, which is towards the mountains, protected, at the distance of thirty or forty feet, by a stockade of fourteen feet in height; the windows and doors throughout closely jalousied, so as to be

capable of excluding every noxious blast from the interior of the dwelling. It was farther recommended, and expected to be enforced as a regulation of barrack economy, that every individual at the station, should put on a dressing-gown of double milled flannel at sunset; that those on guard should assume the watch-coat at the same hour, and not part with it until the sun had risen and attained some height. The sentinel complains that the cold winds, which descend from the mountain, act disagreeably on his feeling; and, it is presumed, not unfrequently injuriously upon his health: it was therefore recommended that the sentinel's walk should be protected, from their direct impression, by the erection of a high stockade at the most exposed parts of it. A house, which was in times past occupied by the commissioned officer who commanded the detachment at Rock Fort, stands close upon the base of the mountain. It is said to have been fatal to almost every one who dwelt in it. It is now possessed by the corporal, to whom the command is at present intrusted. The corporal is a man of mature years; and, being moreover a man of sense and observation, he takes the precaution to close every door and window on the mountain side at sunset, and not to open them until after the sun is fully risen. He has had good health to the present time; and he ascribes the preservation of it to the cause assigned, viz. the exclusion of the mountain winds.

Rock Fort appears to have been constructed for the purpose of barring the passage of an enemy into the plain of Ligueana. The military work occupies a narrow interval between the mountain and the sea. The barrack and guard-house are on the west, or lee side of the fort. A small offensive swamp presents itself near the guard-house ; which, together with the barrack, is exposed by position to the exhalation which issues from it. The inmates of the barrack, or guard-house, have no protection, in the construction of their quarters, from the full force of its impression. The shores of the sea are alluvial, both to windward and leeward of the fort ; as such, they are filled with stagnant moisture. The open swamp is of small extent ; but it is of an offensive kind. It emits exhalation which, impelled by the strong and cold gusts of wind which descend from the mountain during the night, strikes direct upon the guard-house and barrack. It is evident, to any person who takes the trouble to view the position at Rock Fort, that the material cause of the sicknesses which have been so dreadful at this post, consists in the exhalation which arises from the swamp and alluvial surfaces in the vicinity, augmented in force by the impulse of the strong winds which descend from the mountain under which the Fort lies ; consequently it is reasonable to infer that the means, which diminish or suppress the exhalation at its source, which shelter the sleeping apartment from direct impulse, and which guard the individual from contingent impres-

sions of the noxious influence by an extra provision of wearing apparel, are means indispensable to the safe occupation of the post. The swamp on the west of the fort, as of small extent, may be filled up or drained at no great expense of labour; the proposed form of barrack construction is easily attained; the extra provision of apparel implies no expense to the public.—The proper application of these means, simple as they are, would, it is presumed, render Rock Fort tenable without material loss of life.

The form of febrile disease, which principally prevails in the plain of Ligueana, ranks itself with the gastric, usually called bilious remittent. The mode, in which it acts, is pretty uniform at the commencement; it often changes form at a certain period of the course; that is, the prominent action is transferred from one series of parts to another, frequently from the gastric to the cerebral, there giving rise to delirium, coma, stupor, inability, or suspension of muscular power, sometimes convulsion and apoplexy. The course is sometimes rapid,—the termination distinct and final; sometimes protracted,—the termination obscure and imperfect. Where protracted, it not unfrequently lays the foundation of congestion in one or other of the organs contained in the abdominal cavity, thereby ingrafting a valetudinary state of health on the subject, which often continues for life. It sometimes assumes the dysenteric form; and, as such, it is more or less tractable in cure. It is

more common in the autumnal months than at other periods ; it is proportionally more fatal at the termination of the rainy season, and setting in of the north winds than at other times. The concentrated form of fever, which has in pre-eminence obtained the name of yellow fever, occurs occasionally among military and other persons soon after their arrival from Europe or other high latitude, more particularly in the dry season of the year, in crowded quarters at any season ; sometimes sporadically, sometimes epidemically, without ostensible cause that the minutest observation can detect.

The town of Savanna-la-mar, which is on the south side of the island, near the western extremity, stands on the margin of an extensive bay, on a sandy soil, saturated with sea water. The barrack for the troops at this station is well constructed for the preservation of health and the convenience of the occupant ; in fact better constructed for these purposes than any other perhaps in the British islands. It stands in the Savanna, about three-quarters of a mile from the shore, at an elevation of less than twenty feet above the level of the sea.—The principal form of febrile disease at this station is remittent, for the most part simple and regular. The intermittent, as appears by the hospital returns, occurs occasionally. No instance of it was observed by the author, from the year 1774 to the year 1778. The troops were then quartered in barracks, in a fort which was erected at the extremity of a tongue of land which projected into the bay.

The military barracks at Lucea, a station on the north side of the island near the western extremity, occupy the level, but not a low table of land which forms the north side of the harbour. The soil is dry, but not rocky: the point upon which the barracks are erected projects into the sea in such a manner, that it is rarely touched by any other winds than those which pass over a considerable surface of water.—The site is deemed healthy, perhaps as healthy as any sea coast position in the West-Indies. The barracks are not constructed after a good model; and they are not now in good repair:—it would be economy to build anew rather than to repair what exists.

The barrack at Montego Bay, another military station on the north side of the island, occupies a height of about two hundred feet elevation, on the east of the town and road for shipping. The surface of the height is irregular, viz. flat spaces covered with loose soil, numerous projections of rock, many of them excavated like basins, consequently filled with rain water in the wet season. The position is not pleasant in itself: the sick returns of the troops who occupy it give proof that it is not healthy: whether the insalubrity be owing to what belongs to itself, or to exhalation which proceeds from a swamp which lies windward, and which there is reason to believe strikes upon the barrack and winds among the broken surfaces of the height, I do not take upon myself to determine; but this is undeniable that the military are unhealthy

at certain seasons of the year, and that two dwelling houses which were erected on the height, in the vicinity of the barrack, proved so fatal to those who occupied them that they are now abandoned. The position being thus notoriously an unhealthy one, it may be thought to be a question not undeserving consideration whether its military advantages are of sufficient value to compensate for the loss of health and life which, according to good evidence, ensues annually from its occupation ; and, as it is destitute of wood and water, and does not appear, to the common eye, to be a place of strength, whether it would not be a measure of economy to remove the wooden material of the barracks to a more convenient and a less unhealthy site than the present.

Maroon town, near the central ridge of the island, is another of the military stations of Jamaica. It has always been considered as a healthy station for European soldiers. Intermittent and remittent fever, dysentery and inflammation of the lungs, occur occasionally ; ulcers on the legs are frequent —troublesome, and sometimes in a manner epidemic. The barracks and hospital are good : the air of the locality is pure and refreshing : employment seems to be the only thing wanted to make the garrison happy.

Falmouth, another of the military stations for the north side of the island, stands on the level sea coast, on a sandy soil, the barrack separated from the town by a high wall or fence. The wall, while it serves useful military purposes, may be supposed

to be useful as conducing to the preservation of health, by intercepting the course of exhalation which arises from the mangrove swamps that are contiguous to it on the land side. The sea breezes are generally strong at the coast on the north side of the island ; the land winds at this point, as proceeding over a considerable extent of plain before they touch the barrack, are generally diffused and of moderate force. The barrack, which is a wooden building, consists of two stories, the lower story not sufficiently raised from the ground to admit of thorough ventilation underneath :—it is at present over-crowded. Fever of the intermittent and remittent type prevails at Falmouth : it is not ordinarily of an aggravated kind ; it is sometimes aggravated by artificial causes.

Port Maria. The military barracks at this station occupy a ridge of height which projects into the sea, so as to form the west side of the harbour. The height of the ridge appears to be about two hundred feet perpendicular. It is exposed to the violence of winds from all quarters : those from the south and south-east pass over foul and swampy grounds ; and, as such, they are presumptively impregnated with swamp exhalation to a greater or lesser extent. Intermittent and remittent fevers appear among the troops not unfrequently, particularly consequent to a continuance of south-east winds. The barracks are not constructed after a good form : they are in good interior order ; but are at present over-crowded.

The military force is ordinarily stationed near depots of merchandise and harbours for shipping in Jamaica, as in the other intertropical islands; it is consequently stationed at those parts of the coast which are comparatively unhealthy to the natives of Europe. There is thus variety in the quantity and kind of sickness among the military, according to the character of the station; there is also difference according to the season of the year, and remarkable difference in different years without ostensible cause of difference from weather or season.

A depot for the convalescent of the sick military is an object of great importance to the interests of the army. From the extent of the island of Jamaica and variety of locality which its extent presents, it does not appear to the author to be an object of great difficulty to form such arrangement for the accommodation of the convalescent as promises to save many from death, and to restore multitudes to the capability of effective service. The subject has been much discussed; and as it does not appear to have been carried farther than discussion, it will not I trust be deemed presumptuous to state the sum of what occurred to my own observation in my survey of the military quarters in the year 1815. Stony-hill, which had been considered by many as an eligible site for the establishment of a convalescent depot, did not present itself in this light, either as judged by a view of the locality, or as judged by reference to the sick returns of the garrison. It occupies only a middle station in salubrity, as well

as in position, between the swampy sea coast and the high ground of the interior. An extensive interior vale, near the centre of the island, viz. St. Thomas, pressed itself strongly on my notice on this occasion. The base of the plain is elevated,—often covered with fogs; the soil not alluvial; the air is moist but refreshing; the inhabitant apparently vigorous—almost European in aspect. The road from the plain of Ligueana to St. Thomas in the vale is practicable for carriage, the distance not great; and, as the plain contains the greater proportion of the garrison of Jamaica, especially those that are most debilitated by protracted sicknesses, it seemed to be worth an experiment, even if made at some expense, to ascertain whether the air of this district was capable of doing as much for the invalid military as appearances give cause to believe it would. Maroon town, a station on the interior mountain, is admitted by all to be comparatively healthy, and all seem to agree that it would be eligible for a convalescent quarter. The distance from the plain which is the principal station of the troops, and the difficulty of transport on bad roads, preclude trial being made on a large scale. St. Thomas in the vale seems to promise more as a convalescent station for the troops that are stationed in the plain of Ligueana than any other; Lucea is the most eligible for those who are stationed at Savanna la mar, and on all the north coast of the island.

*Island of St. Domingo.*

The island of St. Domingo, though the most valuable of the West-India islands, will not, it is presumed, be ever again in the possession of the British, or any other European power. From this cause, its medical topography, farther than as it is connected with the subject of medical science, will not be deemed an object of interest to Europeans. The island is of great extent, of varied soil, and of great variety of feature. It has been a grave to the British, and even to the French armies in recent times ; but it is not on that account to be branded with the epithet of unhealthy. The sicknesses which were, it must be confessed, singularly destructive, were aggravated by artificial causes, or produced by carelessness in not avoiding what was known by experience to be noxious. The author visited in the year 1796 every part of the island of St. Domingo which was within the British lines. In executing that duty he had the opportunity of observing the effect of locality on the health of the troops. The effects were striking ; but the measure of his pages is now filled up, and he only refers in a cursory manner to the heads of his observation ; the detail was given to the public in 1798.

The sea coast of St. Domingo, from Cape St. Nicholas Mole to Cape Tiburon, was, with various points, in possession of the republicans, under British dominion in the year 1796, consequently variously occupied by British troops.—The harbour

at the mole is formed by a tongue of land, or peninsular projection, which advances into the sea in a northerly direction. The town occupies a small alluvial triangular plain on the west side of the harbour, at the mouth of a ravine which penetrates southerly into the interior. The site of the town is enclosed on the south-east, south, and west by high ground, or hills which rise by stages in the manner of an amphitheatre. The aspect is not inviting, as presenting little else besides bare rock, stunted trees, shrubbery and coarse unseemly plants. The sea breezes at the mole are generally strong, sometimes violent, their impression hot and fiery, as sweeping in their course some part of the bare coast and naked peninsula which is on the east of the harbour. The mole was crowded with soldiers, sailors and adventurers, in the months of June and July, 1796, beyond all proportion. The greater number of the soldiers were recently from Europe. Sickness raged like pestilence among them: the disease was principally the continued fever, known by the name of yellow fever: it was epidemic from an obvious cause, viz undue aggregation of unassimilated subjects. Intermittent fever, though there are no open swamps within the precincts of Cape Nicholas Mole, occurs sometimes in the latter months of the year. The number of the dysenteric is high at all times in the hospital returns, the disease sometimes primary, frequently secondary: ulcer on the legs is common—sometimes gangrenous and destructive.

The town St. Marc, another principal station of British troops on the coast of St. Domingo, between the mole and Port au Prince, stands at the bottom of a deep bay on a triangular plain, which extends interiorly towards the south. The soil of the plain is in some degree alluvial; it is full of moisture, not an open swamp. St. Marc, thus circumstanced, was upon the whole a sickly station to the European military. The prevailing disease was ordinarily intermittent or remittent at the commencement: it was much disposed to change its form at an advanced period; that is, the prominent action was transferred, more or less suddenly, from the gastric to the cerebral system, the transfer indicated by coma, convulsion or other sign which indicated congestion. The dysenteric form of disease was common at St. Marc. In the autumnal months, dysentery or bilious remittent fever was often epidemic among the coloured inhabitants, particularly near the course of a rivulet which traverses the plain on the west.

The town of Larcahaye, between twenty and thirty miles south-west of St. Marc, stands on the sea coast of a plain, which is six or seyen miles in depth and upwards of twenty in length. The soil of the plain is generally light, in some places gravel and mud, in others loose small stones with a scanty interspersion of vegetative mould. The plain is irrigated throughout by water brought from the mountain in aqueducts of masonry; the fields, dressed with skill and care, yield abundant crops:

Larcahaye furnishes a specimen of what St. Domingo had been before the revolution of 1789. The plain of this district has only been occasionally occupied by British troops: when occupied, it was not deemed unhealthy. The prevailing form of disease was fever of the remittent form, more or less aggravated according to circumstance.

The town of Port au Prince, the head quarters of the army, stands in the recess of a deep bay, in a small plain or bottom connected with a large triangular plain, known by the name of Cul de Sac. The site of the town, as encircled by eminences of different height at different places, has some resemblance to the floor of an oven; and, in consequence of this form of locality, the common heat of the climate is artificially augmented, at particular times of the day, by reflection from the heights on the east and north east which consist of a soft white earth or *túf*. The sea breezes are, for the most part, weak during the hotter months of the year: from the great depth of the bay, they seldom arrive at Port au Prince before twelve at noon. The land winds, as proceeding from the centre of an extensive island, and conducted through the channel of a canal, viz. the salt lake, to the plain Cul de Sac, are often strong, unpleasant to sensation, and not unfrequently injurious to health. They prevail during the dry season of the year, more in eddies like whirlwinds; carry sand and dust with them in such quantity as to inundate every thing within doors and greatly to annoy those who are exposed to them.

in the open air. They suspend the progress of vegetation on many occasions, even parch or dry up exhalation from the skin, in a manner somewhat analagous with what is reported of the drying winds of the Arabian desert. The soil in the site of Port au Prince seems, with the exception of some eminences of *tif*, to have been washed from the mountains by torrents of rain, or accumulated upon the shores by the flux of the ocean. Some parts of it may be styled swamp: the foundations of some of the lower streets are laid upon piles. The sea beach on both the flanks is muddy and foul, over-run with mangroves, logwood, weeds and noisome plants. The town is well built; the houses are commodious, some of them magnificent; the streets, broad and regular, intersect at right angles; the whole economical and police arrangements are in fact so designed that Port au Prince, prior to the revolution, must have been a desirable abode in a tropical climate, even amid a multitude of natural disadvantages.—The triangular plain Cul de Sac, at the sea border of a part of which the town of Port au Prince is erected, is twelve or fourteen miles wide at the base. It runs in an easterly direction, narrowing as it proceeds interiorly to join the salt lake. It is of varied soil, viz. swampy, sandy, gravelly, stony, and in many places fine vegetative mould. It may be concluded, from the vestiges still visible, that the plain Cul de Sac was at one time in a state of the highest cultivation. The lands were irrigated by numerous aqueducts of masonry; the man-

sions of the planters were magnificent; the agricultural arrangements were systematically, and, it may be presumed, scientifically designed. The febrile form of disease which appears among the troops stationed at Port au Prince, abstracted from the effects of artificial causes of aggravation, is remittent or intermittent,—not unmanageable, if treated with decision at the commencement. It was fatal to an enormous extent in the British garrison at certain periods of the British occupation; whether in defect of a decisive mode of medical treatment, or extraordinary aggravation of contingent causes, I do not take upon myself now to pronounce. The dysenteric form of fever occurred occasionally: it was some time in a manner epidemic so as to absorb other forms of disease.

Bizoton, a military post erected on an eminence of *tuf* in the centre of swampy and foul grounds, about two miles west from Port au Prince, on the road to Leogane, has been a principal source of sickness and mortality to the garrison at head-quarters ever since its establishment. The disease, the product of this locality, is usually of a double tertian type, the paroxysms characterized by torpor; that is, a form of repressed or fettered action which, in common language, would scarcely be called febrile. The mode of repression varies in form, degree and duration. The pulse develops at a certain point; the faculties of mind emerge; the countenance brightens, or becomes comparatively clear and serene. A similar or stronger repression recurs at a

short interval; torpor increases; coma supervenes; and the patient sinks into the arms of death in a few days, or emerges by slow and almost imperceptible degrees to a state of valetudinary existence. Sometimes, instead of the form of repression now noticed, the Bizoton fever begins in a mild manner; at one time as diarrhoea, at another as intermittent fever of the single tertian type. In this state of apparent security, the type anticipates unexpectedly, or diarrhoea ceases suddenly; stupor, coma, apoplexy or other mode of repressed or suspended febrile action ensue, followed, for the most part, by premature death.

In proceeding westward from Bizoton, Pestel is the first post on the sea coast which was occupied by British troops in the year 1796. The post was established at an insulated height, on a base of rock covered here and there with dry, husky, brick-coloured mould. Intermittent or remittent fever was of rare occurrence; diarrhoea or dysentery occurred occasionally: phlegmons, terminating in ulcers on the legs, prevailed to such extraordinary extent that one-fifth of the detachment or more was generally unserviceable on that account.

Cayemille, about ten miles west of Pestel, near the mouth of a considerable stream of fresh water, on the sides of which extensive swamps of a peculiarly offensive kind present themselves, was occupied only occasionally and to small extent by British troops. The air was pestiferous, so destructive of health that Cayemille could scarcely be considered

as tenable by Europeans. Few, if any of those who did duty at this station, escaped sickness; and, of those who suffered sickness, few escaped with life, or with a state of health that made life desirable.

Jeremie, the principal town on the north side of the part of the island which bears the name of Grande Anse, occupies the side of a hill of moderate height and gentle declivity. The site of the upper part of the town is open and perfectly exposed to the breezes which blow from the sea: the air is comparatively cool during the day; it is sometimes chill during the night. The fort and the principal quarters of the troops are erected on the summit of a ridge of high ground, which, stretching easterly from the side of the mountain, runs in peninsular form between the sea and the embouchure of the Grande Rivière, in such manner as to give the river an easterly direction: the plains on each side of the embouchure are inundated in wet weather; they are under culture, viz. planted with sugar cane. Jeremie is upon the whole a healthy station. Intermittent and remittent fevers are however of frequent occurrence; dysentery is not rare, —sometimes it is epidemic and of an aggravated kind.

Donna Maria, a village on the sea beach west of Jeremie, was occupied for a short time by a small detachment of British troops in the autumn of 1796. The sickness which occurred in the detachment was high, the mortality high in proportion to the number of the sick. The site of Donna Maria is near

the mouth of a stream of fresh water: the soil is alluvial, viz. accumulations of sand and gravel washed from the mountains by torrents of rain, mixed more or less with mud left at the shore by the tides: the continuity of the surface is moreover broken in several places by lagoons, over-run with grass and weeds.

Irois, a station at a shallow bay on the north-west extremity of the island, deemed important to the security of the Grande Anse, had a considerable garrison of European troops during the whole time that St. Domingo was in possession of the British. The fort is erected upon a low conical eminence, surrounded, except on the north, by swamps or lagoons of a most offensive kind. The fort and quarters of the troops stand in a plain or bottom, which is encompassed on three sides by a series of hills in form of an amphitheatre, of different height at different points. This plain, of extreme richness of soil, was once planted with indigo; it is now desolate, over-run with weeds and rubbish. The heat is excessive; rains are frequent and heavy; exhalation from the swampy surface copious; the air oppressive to the sensation, abstracted from impression derived from great heat. The site is singularly insalubrious: the form of disease is principally periodic fever, frequently intermittent, suspicious at the commencement—treacherous in its whole course.

Besides the stations on the coast now brought under notice, various posts in the interior were oc-

cupied by detachments of troops during the time the island was in British possession. The differences which occurred in the form of disease at these different stations were considerable. I now bring them under view, as illustrative of doctrines which are important to the preservation of the health of Europeans in tropical climates.

Millet, a post about nine miles interior from Irois, in a south-east direction, occupies the summit of a conical eminence at the conflux of three streams, which form what is called Grande Rivière in Grande Anse. The eminence, which is entirely cleared of its woods, is steep; the channels of the streams and the ravines which insulate the height, are deep and strikingly grand. Millet is deluged, like other parts at the western extremity of St. Domingo, with frequent and heavy rains; the air is notwithstanding light and pure; the expressions of animal life buoyant. Fevers and bowel complaints occur occasionally; phlegmons, arising spontaneously on the legs and degenerating into sores or ulcers, fill the sick list—one-fourth part of the garrison being for the most part unserviceable on that account.

Ivonet, a planter's habitation eastward of Irois, at an elevation of six hundred feet or more above the level of the sea, and at the distance of two miles in a direct line from the coast, was occupied for some time by a detachment of British troops. The environ of Ivonet is cleared of woods; the site is dry in itself, gradually inclined towards the sea coast, skirted on the north by an uncultivated plain

of some extent, and several swampy surfaces, over which the breezes from the sea pass in their ascent to the height on which the troops were stationed. The light company of the sixty-ninth regiment, which had been upwards of twelve months among the mountains of Larcahaye, without experiencing material sickness, was ordered to Ivonet at the beginning of June, 1797. By the month of August, more than two-thirds of them were or had been in the sick list. The form of the disease was generally remittent, sometimes continued and concentrated, so as to resemble the yellow fever of persons recently arrived in a tropical climate.

The district of Jeremie, part of the Grande Anse of St. Domingo, was protected on the east by a chain of posts, extended from Pestel at the sea coast to Raymond at the central ridge. Of these, Desrivaux, about nine miles interior from Pestel, stands at the margin of a deep ravine or valley, about half a mile in breadth, luxuriant of herbage, but not smampy. Intermittent fevers occurred occasionally among the troops stationed at Desrivaux: dysenteric complaints were frequent; sores on the legs were troublesome—so numerous as often to render the fourth part of the garrison unserviceable.

Camp du Centre, a coffee plantation about fourteen miles interior from Desrivaux, formed the next point in the Cordon. The habitations of the planter in which the troops were quartered, stand in the centre of a circular plain of a coarse brick mould soil, nearly one mile in diameter. The plain is

cleared of woods and planted with coffee trees; the surrounding heights are still covered with their natural wood, mostly timber trees. Intermittent or remittent fever occurred occasionally; dysentery frequently; and sores on the legs were troublesome.

Raymond, a post above five miles interior from Camp du Centre, at the summit of the central ridge of the island, commands a distant view of the sea on the north and south. It was garrisoned in the years 1796 and 1797 by a detachment of the seventeenth regiment of foot. The detachment preserved its health during its residence, perhaps as perfectly as if it had been in Europe. Diseases of the febrile class were rare; sores on the legs not troublesome. Fogs often covered the height; rains were frequent and heavy.

Fourmier, a plantation on the summit of the ridge of mountain which covers Port au Prince on the south, was occupied as a station for British troops during the years 1796 and 1797. The ascent on the north side is steep, the elevation of the summit, as judged by the eye, not much short of two thousand feet above the sea level. The position hangs in a manner over Port au Prince; and, as fully exposed, it is struck directly by the sea breezes which pass over the foul shores of the bay which are contiguous to that place. The dysenteric form of disease was frequent among the troops who were stationed at Fourmier. It is not clear how far the disease was the product of locality, or of artificial circumstances to which the troops were

exposed, viz. indifferent provisions, and rain water for drink collected in ponds or exposed tanks. The disease, as it appeared at this station, was slow in its course;—tedious and not unfrequently fatal in its issue. The skin was generally harsh and dry—often of a lobster-like redness: there rarely appeared marks of distinct fever in the course of it.

The plain of Larcahaye was not, as already observed, a permanent station for British troops; the mountains were occupied at several points by different detachments during the years 1796 and 1797. The elevation of the stations above sea level was different, varying from fifteen hundred to three thousand feet. Fever in regular form was not common; dysentery was frequent, sometimes severe, particularly among those who had been previously quartered in the plain: sores on the legs prevailed to great extent; sometimes to not less than one-fourth of the numbers present.

A chain of lofty mountain, rising at the coast in the interval between St. Marc and Larcahaye, tends interiorly to a southerly direction to the salt lake. The northern part of this mountainous mass bears the name of Larcahaye Mountain; the south, that of Grand Bois. The bay of Gonave or Leogane, the plains of Larcahaye and Cul de Sac are on the west side of the mountain; the district of Mirebalais, an extensive valley of a beautiful *coup d'œil*, lies on the east. The Mirebalais is studded with numerous small hills or eminences, intersected by ravines, watered by streams and rivulets—cleared

and planted at different intervals, so as to form a grouping of scenery, which entitles it to the name it bears ; a name which comes to the lips of every traveller when the prospect bursts upon his sight, in emerging from between the mountains of the Grand Bois. The Artibonite, a large river which rises in the east, near the centre of the island, runs westerly through a widely expanded valley of varied soil until it arrives near the south-east extremity of the mountainous chain which bears the name of Grand Bois : it there assumes a northerly course, and proceeds to fall into the sea on the east of St. Marc. The principal town in this district stands on high ground, on the margin of a ravine, a few hundred paces west of the bed of the river. The valley through which the Artibonite flows, is of great extent, wide as well as long, the banks are generally low, insufficient to confine the waters to the channel in the season of the heavy rains : the low grounds are thus inundated, so as to present numerous exhaling surfaces as acted upon by a powerful sun. The town of Mirebalais, as standing upon high ground near the west bank of the river, is necessarily exposed to the impulse of the breezes which pass over the inundated or swampy parts of the plain on the east ; and, as such, it does not appear to be a well chosen position, in so far as regards the health of the inhabitants. The thermometer often rises high in this interior valley, especially in long continued dry weather. This occurred in the months of May and June, 1796.

Sickness prevailed epidemically at that time :— severe upon the assimilated inhabitants ; it nearly annihilated a detachment (three hundred) of the eighty-second regiment of foot.

Banica, a station near the centre of the island, was seized by the British in the month of August, 1796. The district of Banica can scarcely be said to be cultivated. The plains are covered with herds of cattle ; patches of cassavi or Indian corn, near a homely cabin on a ground floor, comprehend, for the most part, the whole of the Spanish improvement. The town of Banica, though a long established settlement, has no appearance of magnificence : it stands upon the south bank of the Artibonite, where it is a clear and beautiful, but fordable stream. The air is light ; the heat, though occasionally high during the day, is not oppressive so as to preclude the European from taking active exercise in the open air at any time. Banica was taken by a detachment of Colonial infantry and European cavalry. The cavalry experienced no sickness during its residence at Banica, a period of eight months : it sickened when it returned to the plain Cul de Sac, and died in great proportion.

The island of St. Domingo, from the great variety of soil and position occupied by detachments of troops between the years 1795 and 1798, afforded a wider field for observation on the subject of military health than any other of the intertropical islands. The endemic disease of St. Domingo is one in its essence : it is modified by locality and other

circumstance so as to appear, when superficially viewed, a disease of extreme variety. The form usually considered as febrile varies from intermit-tent—simple, mild and tractable, to yellow fever—continued, concentrated, and fatal in great proportion, as left to its own course. The sea coasts are almost uniformly less healthy than the interior; and those parts of the sea coast which are swampy—or, though dry and elevated in actual position, which are within the sphere of swamp exhalation are, as might be expected, the least healthy. On the first ridge of mountain in receding from the sea coast, at the height of a thousand feet or upwards above sea level, intermittent fever, dysentery and sores on the legs are the more common forms of disease; at a higher elevation and more removed from the coast, the dysentery is still frequent; sores on the legs predominate: the central ridge, in so far as there has been opportunity of forming opinion by experience, is not perhaps less healthy than most countries in Europe. The causes of disease might be supposed to be in preternatural activity during the time the sea coasts of St. Domingo were in pos-session of the British. The vegetative power of the soil is great; and, as it was not at the time suf-ficiently expended in the developement of vegetable production, there is some reason to believe that, as it existed, it acted injuriously and with aggravated force on the health of man. Culture was in a great measure neglected; the establishments of the planter were in ruins; the drains and aqueducts choked

and useless; the fields overrun with weeds and rubbish; the exhalation from foul surfaces abounded—more pernicious perhaps, as more abounding, than if the surface had never been broken by the hoe. The troops recently imported from Europe, prepossessed against the climate, crowded in towns on the sea coast, or stationed at unhealthy places as exigences of service required, were thus frequently exposed to influences of soil and climate, the noxious power of which was often augmented artificially by contingencies, rarely diminished by the enforcement of a system of scientific discipline and well considered regimen. The mortality was great; but I cannot now give a correct statement of the proportion, having lost or mislaid the hospital returns.

I have now given a cursory view of medical topography, in so far as respects military stations, in most of the British intertropical possessions. I have done so, in hopes that the facts stated may lead those who may be disposed to consider the subject with attention, to attain correct ideas on the nature of the causes which act adversely upon human health, as well as of the means which may be employed to avert or to diminish the effect of the pernicious action thereby produced. The manner will be thought to be tedious by some, the matter superfluous by others. I do not pretend to say that it is unobjectionable: I only take leave to say that if I have brought facts under view which establish the unity of the endemic cause which subverts human health,

the unity of the means which avert or diminish the extent of its injurious action, the unity of the medical principle, and the efficiency of the means which, arresting the destructive tendency of the act, collaterally or directly restore health to its pristine state, I shall be satisfied with the course which I have taken, and bear without irritation the criticisms of the present time.

It will not, it is presumed, be deemed impertinent nor altogether useless, after the statement which has been given of the existing condition of the provisions which are made in the British colonies for the preservation of the health and cure of the diseases of the military, to throw the eye cursorily over the provisions which have been made for the same purpose by other nations who have planted colonies and maintained armies in the same tropical climates. The comparison will not, I am aware, flatter national vanity. There are no grounds in this case on which we can support the opinion of national intellectual superiority; but if the facts stated, ungracious as they are, tend to illustrate the truth of principles, something may be gained from the exposition which national partiality could not warrant me to conceal.

The French, like others who planted colonies in the islands of the West Indies, fixed the site of the principal towns on the sea coast, generally on low, often near, or actually in swampy places. They did so for the sake of harbour; but, aware of the injury likely to accrue to health from the measure

which necessity obliged them to adopt, they rarely failed to apply such means in remedy as their reason suggested, or their experience satisfied them were useful. In correspondence with this view, the *enceinte* of the principal of the French built towns is drained in a scientific manner; the streets are paved with stone, or otherwise rendered dry and commodious; the lower floor of the dwelling-houses, generally raised more or less from the ground, is paved with brick on pan-tile laid on lime, so as effectually to prevent the ascent of vapour from the earth. Water of the best quality that can be found is ordinarily conducted from the mountains in aqueducts of masonry; lofty and wide spreading trees sometimes line the streets; and, in most of the principal towns squares and shaded walks are so disposed as to furnish regalement to the inhabitant at most times of the day. Gardens and variety of minor conveniences, laid out with taste for pleasure and utility, render many of the French towns agreeable, even to the fastidious or prepossessed Englishman.

The hospital establishments for the sick of the French army and navy in the West-Indies, in so far as opinion could be formed from what remained of them after the revolution of 1789, appeared to have been laid on a large scale. The buildings, magnificent in external appearance, were well arranged interiorly for the comfort of the sick and the effective execution of the medical officers' duty. They were generally erected in low situations; the lower floors were raised more or less from the

ground, paved with brick, or pan-tile laid on lime; the wards were large—lofty and wide. Baths, considered by the French as indispensable appendages of hospitals, were constructed with neatness; they were placed conveniently for the purposes of the sick, and supplied abundantly with pure water—hot or cold as might be most suitable to the case.

The Danes, though only a minor power in the West-Indies, command respect on account of the good sense which characterizes their ostensible acts; they deserve praise for their prospective humanity in making provision for the care of the sick. The hospitals at St. Thomas and Santa Cruz are well constructed as hospitals; that is, commodious in their interior arrangements. They are placed in a bad locality:—at St. Thomas from necessity; at Santa Cruz apparently from the erroneous medical doctrine that ventilation is indispensable for hospitals, even if it be ventilation by the air of a swamp.

The traces of the Dutch establishments for the reception of military sick had disappeared at Demerara and Berbice before the year 1812; the hospital for the colony of Surinam still existed. It was occupied by British sick; and, as appears by the description which is given of it in the third part of the present work, it was superior in its accommodations to most of the receptacles of sick in the British islands.

The British, though the most powerful and the richest of all the European nations who have plan-

ted colonies in the West-Indies, is undeniably the least scientific, and the least interested of all others in what concerns the subject of health, whether it be the health of the civil community, or the military—the direct servants of the state. British built towns are built for the most part as every one pleases—without plan or general design connected with a system of health arrangement. The quarters provided for the military, besides the locality which is rarely favourable to the preservation of health, are, for the most part, ill contrived for comfort and badly constructed as wholesome dwellings. They are for the most part sheds—narrow and exposed to vicissitudes of weather ; or they are masses of building calculated to give cover to a strong corps—the inference is obvious. British hospitals, or places into which the sick are collected, are often no other than common barracks—not always the best of the barracks. The houses, which have been erected for the express purpose of recovering sick, are perhaps in no instance such as a physician could be supposed to have planned, or that his judgment could be supposed to approve. Those at Barbados, Grenada and Jamaica are the least objectionable ; they are not without defects, even important ones.

FINIS.















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